

GenCore version 5.1.6
Copyright (c) 1993 - 2005 Compugen Ltd.

OM protein - protein search, using sw model

Run on: September 23, 2005, 12:39:59 ; Search time 51.1475 Seconds
(without alignments)
300.354 Million cell updates/sec

Title: US-10-727-514-4

Perfect score: 147

Sequence: 1 APTSSSTKTKQLLEHLLLDLQMLINGINN 30

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 1612378 seqs, 512079187 residues

Total number of hits satisfying chosen parameters: 1612378

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 100 summaries

Database :

UniProt_03.*

1: uniprot_spot.*

2: uniprot_trembl.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	147	100.0	150	2 Q9C001	P60568 homo sapien
2	147	100.0	153	1 IL2 HUMAN	P60569 hylobates l
3	147	100.0	153	1 IL2 HYLLA	P60593 homo sapien
4	147	100.0	153	2 Q6NZ93	Q29615 macaca fasc
5	147	100.0	154	1 IL2 MACFA	P68291 macaca mula
6	147	100.0	154	1 IL2 MACMU	P68290 macaca neme
7	147	100.0	154	1 IL2 MACNE	P68591 papio anubi
8	147	100.0	154	1 IL2 PAPAN	Q8mkh2 saimiri sci
9	145	98.6	154	1 IL2 SAISC	Q7ifm2 aotus lemur
10	145	98.6	154	2 Q7JFM2	Q7ifm3 aotus nigri
11	145	98.6	154	2 Q7JFM3	Q7ifm4 aotus vocif
12	145	98.6	154	2 Q7JFM4	Q7ifm5 aotus nancy
13	145	98.6	154	2 Q9XS38	Q6qwn0 homo sapien
14	145	98.6	154	2 Q6QWNO	Q7z7m3 homo sapien
15	143	97.3	133	2 Q6QWNO	P46649 cercopithec
16	143	97.3	133	2 Q7Z7M3	Q6nz91 homo sapien
17	142	96.6	154	1 IL2 CERTO	Q13169 homo sapien
18	137	93.2	153	2 Q6NZ91	Q16334 homo sapien
19	135.5	92.2	156	2 Q13169	Q62641 mirounga an
20	134	91.2	139	2 Q16334	Q07885 felis silve
21	116	78.9	154	1 IL2 MIRAN	Q9xt83 halichoerus
22	114	77.6	154	1 IL2 FELCA	Q9bg74 canis famil
23	108.5	73.8	155	2 Q9XT83	Q9tvl2 canis famil
24	107.5	73.1	66	2 Q9BG74	Q80xg3 peromyscus
25	107.5	73.1	155	1 IL2 CANFA	Q7620 oryctolagus
26	107	72.8	79	2 Q9TV12	Q9mz19 oryctolagus
27	107	72.8	152	2 Q80XG3	Q923t2 sigmodon hi
28	107	72.8	153	1 IL2 RABIT	Q70329 mesocricetu
29	106	72.1	133	2 Q9MZ19	
30	106	72.1	155	2 Q923T2	
31	103	70.1	138	2 Q70329	

32	97	66.0	155	1	IL2 RAT	P17108 rattus norv
33	96	65.3	154	1	IL2 FIG	P26891 sus scrofa
34	95	64.6	155	1	IL2 MERUN	Q08081 meriones un
35	95	64.6	154	2	Q865X2	Q865x2 lama glama
36	92	62.6	149	1	IL2 HORSE	P37997 equus cabal
37	91	61.9	123	2	Q9UCF5	Q9ucf5 homo sapien
38	88	59.9	152	1	IL2 ORCOR	Q97513 orcinus orc
39	87	59.2	38	2	Q71V48	Q971v48 homo sapien
40	83	56.5	154	2	Q9XT84	Q9xt84 delphinapte
41	82	55.8	152	2	Q88210	Q88210 cavia porce
42	79	53.7	69	2	Q9GJR4	Q9gjr4 ovia aries
43	79	53.7	136	2	Q8E220	Q8e220 capra hircu
44	79	53.7	145	2	Q8HZ67	Q8hz67 bos indicus
45	79	53.7	155	1	IL2 BOVIN	Q95016 bos taurus
46	79	53.7	155	1	IL2 BUBBU	P95kp3 bubalus bub
47	79	53.7	155	1	IL2_CAPHI	P36835 capra hircu
48	79	53.7	155	1	IL2_SHEEP	P19114 ovia aries
49	79	53.7	155	2	Q8HYR7	Q8hyr7 bos taurus
50	79	53.7	155	2	Q9GL83	Q9gl83 capra hircu
51	79	53.7	162	1	IL2 CEREL	P51747 cervus elap
52	77	52.4	147	2	Q7YRQ2	Q7yqr2 bos mutus g
53	69	46.9	39	2	Q9BG73	Q9bg73 canis famil
54	69	46.9	150	2	P70291	P70291 mus musculu
55	69	46.9	169	2	Q9QUS8	Q9qus8 mus musculu
56	64.5	43.9	166	1	IL2 MUSSP	P70294 mus musculu
57	64.5	43.9	166	1	IL2 MUSSP	Q88667 mus spretus
58	64	43.5	63	2	Q8BHA4	Q8bha4 mus musculu
59	64	43.5	169	1	IL2 MOUSE	P04351 mus musculu
60	62.5	42.5	159	2	P70293	P70293 mus musculu
61	60.5	41.2	155	2	P70292	P70292 mus musculu
62	59	40.1	155	2	Q85QE7	Q85qe7 manheimia
63	54	36.7	357	1	AAAA_EMENTI	P21133 emeritella
64	52	35.4	101	2	Q6DUY6	Q6duy6 cryptospori
65	52	35.4	116	2	Q29138	Q29138 trichechus
66	52	35.4	285	2	Q83F57	Q83f57 coxiella bu
67	52	35.4	300	2	Q8VW37	Q8vw37 coxiella bu
68	52	35.4	300	2	Q841J1	Q841j1 coxiella bu
69	52	35.4	304	2	Q841J2	Q841j2 coxiella bu
70	52	35.4	304	2	Q841X8	Q841x8 campylobact
71	52	35.4	737	2	Q9KTG5	Q9ktg5 vibrio chol
72	52	35.4	1530	2	Q81BS2	Q81bs2 plasmodium
73	51.5	35.0	2673	2	Q7QPT6	Q7qpt6 giardia lam
74	51	34.7	95	2	Q8BN23	Q8bn23 mus musculu
75	51	34.7	304	2	Q930K5	Q930k5 rhizobium m
76	51	34.7	457	2	Q9NIP5	Q9nip5 strongyloce
77	51	34.7	517	2	Q8R6R8	Q8r6r8 thermoplaea
78	51	34.7	627	1	FLGK_BORBU	P70859 borrelia bu
79	51	34.7	627	2	Q86213	Q862i3 borrelia ga
80	51	34.7	746	2	Q6FNH5	Q6fnh5 candida gla
81	50	34.0	365	2	P71599	P71599 mycobacteri
82	50	34.0	365	2	Q7U2Z7	Q7u2z7 mycobacteri
83	50	34.0	1046	1	POL_SIVAG	P27980 simian immu
84	50	34.0	1454	1	CSP2_HUMAN	Q60244 h cofactor
85	50	34.0	3175	1	RPOA_EAV	P19811 equine arte
86	49.5	33.7	715	2	Q8EJ30	Q8ej30 shewanella
87	49.5	33.7	1518	2	Q7RA10	Q7ra10 plasmodium
88	49	33.3	104	2	Q632T6	Q632t6 bacillus th
89	49	33.3	104	2	Q6HCC6	Q6hcc6 bacillus th
90	49	33.3	149	2	Q7R1Q4	Q7rlq4 giardia lam
91	49	33.3	262	2	Q75ZP3	Q75zp3 sus scrofa
92	49	33.3	315	2	Q6L2K3	Q6l2k3 picophiliu
93	49	33.3	322	2	Q72UY1	Q72uy1 leptospira
94	49	33.3	322	2	Q8EZZ2	Q8ezz2 leptospira
95	49	33.3	334	2	Q7NRQ8	Q7nrq8 chromobacte
96	49	33.3	456	2	Q6BS49	Q6bs49 debaryomyce
97	49	33.3	458	2	O15996	O15996 hemientromy
98	49	33.3	543	2	Q9KSF8	Q9ksf8 vibrio chol
99	49	33.3	602	2	Q8DYP7	Q8dyp7 streptococc
100	49	33.3	602	2	Q8E4A4	Q8e4a4 streptococc

ALIGNMENTS

```

RESULT 1
ID Q9C001 PRELIMINARY; PRT; 150 AA.
AC Q9C001;
DT 01-JUN-2001 (TrEMBLrel. 17, Created)
DT 01-JUN-2001 (TrEMBLrel. 17, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Interleukin-2 (Fragment).
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX NCBI_TaxID=9606;
RN [1]_TaxID=9606;
RP SEQUENCE FROM N.A.
RX MEDLINE=20345237; PubMed=11093171;
RX DOI=10.1002/1521-4141(2000012)30:12<3516::AID-IMMU3516>3.0.CO;2-S;
RA Matesanz F., Delgado C., Fresno M., Alcina A.;
RT "Allelic selection of human IL-2 gene.";
RL Eur. J. Immunol. 30:3516-3521(2000).
DR EMBL; AF228636; AAG53575.1; -.
DR HSP; P60568; IIRL.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR009079; 4_helix_cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PD00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN_2; 1.
DR NON_TER 150 150
FT SEQUENCE 150 AA; 17312 MW; BF5860F8436ACE5 CRC64;
SQ
Query Match 100.0%; Score 147; DB 2; Length 150;
Best Local Similarity 100.0%; Pred. No. 5,1e-14;
Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 APTSSSTKTKTQLQLHLLLDLQMLNGINN 30
Db |||||
21 APTSSSTKTKTQLQLHLLLDLQMLNGINN 50

RESULT 2
ID IL2_HUMAN STANDARD; PRT; 153 AA.
AC P60568; P01585;
DT 21-JUL-1986 (Rel. 01, Created)
DT 21-JUL-1986 (Rel. 01, Last sequence update)
DT 25-OCT-2004 (Rel. 45, Last annotation update)
DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF)
DE (Aldeleukin).
GN Name=IL2;
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX NCBI_TaxID=9606;
RN [1]_TaxID=9606;
RP SEQUENCE FROM N.A.
RX MEDLINE=84247353; PubMed=6330695;
RA Holbrook N.J., Lieber M., Crabtree G.R.;
RT "DNA sequence of the 5' flanking region of the human interleukin 2
RT gene: homologues with adult T-cell leukemia virus.";
RL Nucleic Acids Res. 12:5005-5013(1984).
RN [2]_TaxID=9606;
RP SEQUENCE FROM N.A.
RX MEDLINE=83167472; PubMed=6403867;
RA Taniguchi T., Maecu H., Fujita T., Takaoka C., Kashima N.,
RA Yoshimoto R., Hamuro J.;
RT "Structure and expression of a cloned cDNA for human interleukin-2.";
RL Nature 302:305-310(1983).
RN [3]_TaxID=9606;

```

```

RP SEQUENCE FROM N.A.
RX MEDLINE=84023840; PubMed=6312994;
RA Maeda S., Nishino N., Obaru K., Mita S., Nomiya H., Shimada K.,
RA Fujimoto K., Teranishi T., Hirano T., Onoue K.;
RT "Cloning of interleukin 2 mRNAs from human tonsils.";
RL Biochem. Biophys. Res. Commun. 115:1040-1047(1983).
RN [4]_TaxID=9606;
RP SEQUENCE FROM N.A.
RX MEDLINE=83246551; PubMed=6306584;
RA Devos R., Plaetnick G., Cheroutre H., Simons G., Degraeve W.,
RA Tavernier J., Renaud E., Fiers W.;
RT "Molecular cloning of human interleukin 2 cDNA and its expression in
RT E. coli.";
RL Nucleic Acids Res. 11:4307-4323(1983).
RN [5]_TaxID=9606;
RP SEQUENCE FROM N.A.
RX MEDLINE=84170356; PubMed=6608729;
RA Holbrook N.J., Smith K.A., Fornace A.J. Jr., Comeau C.M.,
RA Wiskocil R.L., Crabtree G.R.;
RT "T-cell growth factor: complete nucleotide sequence and organization
RT of the gene in normal and malignant cells.";
RL Proc. Natl. Acad. Sci. U.S.A. 81:1634-1638(1984).
RN [6]_TaxID=9606;
RP SEQUENCE FROM N.A.
RX MEDLINE=84170243; PubMed=6324170;
RA Fujita T., Takaoka C., Matsui H., Taniguchi T.;
RT "Structure of the human interleukin 2 gene.";
RL Proc. Natl. Acad. Sci. U.S.A. 80:7437-7441(1983).
RN [7]_TaxID=9606;
RP SEQUENCE FROM N.A.
RX MEDLINE=95239150; PubMed=7722480;
RA Eisenberg O., Faber-Elman A., Lotan M., Schwartz M.;
RT "Interleukin-2 transcripts in human and rodent brains: possible
RT expression by astrocytes.";
RL J. Neurochem. 64:1928-1936(1995).
RN [8]_TaxID=9606;
RP SEQUENCE FROM N.A.
RX MEDLINE=96422299; PubMed=8824916;
RX DOI=10.1002/(SICI)1098-2795(199602)43:2<180::AID-MRD7>3.3.CO;2-D;
RA Chernicky C.L., Tan H., Burfeind P., Ilan J., Ilan J.;
RT "Sequence of interleukin-2 isolated from human placental poly A+ RNA:
RT possible role in maintenance of fetal allograft.";
RL Mol. Reprod. Dev. 43:180-186(1996).
RN [9]_TaxID=9606;
RP SEQUENCE FROM N.A.
RA Rieder M.J., Carrington D.P., Chung M.-W., Lee K.L., Poel C.L., Yi Q.,
RA Nickerson D.A.;
RT "SeattleSNPs: NHLBI HL66682 program for genomic applications, UW-
RT FHCC, Seattle, WA (URL: http://pga.gs.washington.edu).";
RL Submitted (MAR-2001) to the EMBL/GenBank/DBJ databases.
RN [10]_TaxID=9606;
RP SEQUENCE FROM N.A.
RX MEDLINE=2238257; PubMed=12477932; DOI=10.1073/pnas.242603899;
RA Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
RA Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
RA Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Haieh F.,
RA Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA Stapleton M., Soares M.B., Bonaldo M.F., Casavant T.L., Scheetz T.E.,
RA Brownstein M.J., Ustin T.B., Toshiyuki S., Carninci P., Prange C.,
RA Roha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
RA Basak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
RA Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA Villalon D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
RA Fahey J., Helton E., Kettman M., Madan A., Rodriguez S., Sanchez A.,
RA Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
RA Rodriguez R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smalls D.E.,
RA Schnerch A., Schein J.E., Jones S.J.M., Marra M.A.;
RT "Generation and initial analysis of more than 15,000 full-length human

```



```

CC -----
DR EMBL; M11144; AAA35454.1; -.
DR PIR; A94067; ICGI2.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN 2; 1.
DR PROSITE; PS00424; INTERLEUKIN 2; 1.
KW Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
FT SIGNAL 1 20 By similarity.
FT CHAIN 21 153 Interleukin-2.
FT CARBOHYD 23 23 O-linked (GalNAc. . .) (By similarity).
FT DISULFID 78 125 By similarity.
SQ SEQUENCE 153 AA; 17628 MW; 59E2F40F25860F84 CRC64;

Query Match 100.0%; Score 147; DB 1; Length 153;
Best Local Similarity 100.0%; Pred. No. 5.2e-14;
Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQLEHLLLDLQMLINGINN 30
DB 21 APTSSSTKKTQLEHLLLDLQMLINGINN 50

RESULT 4
QNZ93 PRELIMINARY; PRT; 153 AA.
ID Q6NZ93
AC Q6NZ93
DT 05-JUL-2004 (TrEMBLrel. 27, Created)
DT 05-JUL-2004 (TrEMBLrel. 27, Last sequence update)
DT 05-JUL-2004 (TrEMBLrel. 27, Last annotation update)
DE Interleukin 2.
GN Name=IL2;
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=PCR rescued clones;
RX MEDLINE=22388257; PubMed=12477932; DOI=10.1073/pnas.242603899;
RA Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
RA Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
RA Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
RA Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA Stapleton M., Soares M.B., Bonaldo M.F., Casavant T.L., Scheetz T.E.,
RA Brownstein M.J., Ustin T.B., Toshiyuki S., Carninci P., Prange C.,
RA Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
RA Bosak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
RA Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA Villalón D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
RA Fahy J., Helton E., Kettman M., Madan A.C., Rodrigues S., Sanchez A.,
RA Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA Rodriguez A.C., Grimwood J., Schmutz J., Myers R.M., Butterfield Y.S.,
RA Krzywinski M.I., Skalska J., Smalios D.E., Schnerch A., Schein J.E.,
RA Jones S.J., Marra M.A.;
RT "Generation and initial analysis of more than 15,000 full-length human
RT and mouse cDNA sequences."
RL Proc. Natl. Acad. Sci. U.S.A. 99:16899-16903(2002).
RN [2]
RP SEQUENCE FROM N.A.
RC TISSUE=PCR rescued clones;
RA Strausberg R.;
RL Submitted (FEB-2004) to the EMBL/GenBank/DBJ databases.
DR EMBL; BC066254; AAH66254.1; -.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR009079; 4_helix_cytokine.

```

```

DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN 2; 1.
DR PROSITE; PS00424; INTERLEUKIN 2; 1.
SQ SEQUENCE 153 AA; 17597 MW; 1942F50F25960E88 CRC64;

Query Match 100.0%; Score 147; DB 2; Length 153;
Best Local Similarity 100.0%; Pred. No. 5.2e-14;
Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQLEHLLLDLQMLINGINN 30
DB 21 APTSSSTKKTQLEHLLLDLQMLINGINN 50

RESULT 5
IL2_MACFA STANDARD; PRT; 154 AA.
ID IL2_MACFA
AC Q29615;
DT 01-NOV-1997 (Rel. 35, Created)
DT 01-NOV-1997 (Rel. 35, Last sequence update)
DT 05-JUL-2004 (Rel. 44, Last annotation update)
DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
GN Name=IL2;
OS Macaca fascicularis (Crab eating macaque) (Cynomolgus monkey).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Cercopitheciidae;
OC Cercopitheciinae; Macaca.
OX NCBI_TaxID=9541;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=Peripheral blood;
RA Yabe M., Matsuura Y., Tatsumi M.;
RL Submitted (JUL-1995) to the EMBL/GenBank/DBJ databases.
CC -!- FUNCTION: Produced by T-cells in response to antigenic or
CC mitogenic stimulation, this protein is required for T-cell
CC proliferation and other activities crucial to regulation of the
CC immune response. Can stimulate B cells, monocytes, lymphokine-
CC activated killer cells, natural killer cells, and glioma cells (By
CC similarity).
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- SIMILARITY: Belongs to the IL-2 family.
CC
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC
CC EMBL; D63352; BAA09676.1; -.
CC HSSP; P01585; 1M49.
DR InterPro; IPR009079; 4_helix_cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN 2; 1.
DR Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
KW T-cell.
FT SIGNAL 1 20 By similarity.
FT CHAIN 21 154 Interleukin-2.
FT CARBOHYD 23 23 O-linked (GalNAc. . .) (By similarity).
FT DISULFID 78 126 By similarity.
SQ SEQUENCE 154 AA; 17686 MW; 7853FE624A5E4A49 CRC64;

Query Match 100.0%; Score 147; DB 1; Length 154;
Best Local Similarity 100.0%; Pred. No. 5.2e-14;
Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```

```

QY      1 APTSSSTKKTQLQLEHLLDLQMLNGINN 30
DB      21 APTSSSTKKTQLQLEHLLDLQMLNGINN 50

RESULT 6
IL2_MACMU
ID IL2_MACMU STANDARD; PRT; 154 AA.
AC P68291; P51498;
DT 01-OCT-1996 (Rel. 34, Created)
DT 01-OCT-1996 (Rel. 34, Last sequence update)
DT 25-OCT-2004 (Rel. 45, Last annotation update)
DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
GN Name=IL2;
OS Macaca nemestrina (Pig-tailed macaque).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
OC Cercopithecinae; Macaca.
OX NCBI_TaxID=9545;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=Blood;
RX MEDLINE=96003435; PubMed=7561102;
RA Villinger F.J., Brar S.S., Mayne A.E., Chikkala N., Ansari A.A.;
RT "Comparative sequence analysis of cytokine genes from human and
nonhuman primates.";
RL J. Immunol. 155:3946-3954 (1995).
CC -!- FUNCTION: Produced by T-cells in response to antigenic or
CC mitogenic stimulation, this protein is required for T-cell
CC proliferation and other activities crucial to regulation of the
CC immune response. Can stimulate B cells, monocytes, lymphokine-
CC activated killer cells, natural killer cells, and glioma cells (By
CC similarity).
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- SIMILARITY: Belongs to the IL-2 family.
CC
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC
CC EMBL; U19847; AAB60400.1; -.
CC HSP; P01585; I48.
CC InterPro; IPR009079; 4_helix_cytokine.
CC InterPro; IPR000779; Interleukin-2.
CC Pfam; PF00715; IL2; 1.
CC PRINTS; PR00265; INTERLEUKIN2.
CC SMART; SM00189; IL2; 1.
CC PROSITE; PS00424; INTERLEUKIN_2; 1.
CC Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
CC T-cell.
CC SIGNAL 1 20 By similarity.
CC CHAIN 21 154 Interleukin-2.
CC CARBOHYD 23 23 O-linked (GalNAc...) (By similarity).
CC DISULFID 78 126 By similarity.
CC SEQUENCE 154 AA; 17685 MW; 6AEB480F204BA49 CRC64;

Query Match 100.0%; Score 147; DB 1; Length 154;
Best Local Similarity 100.0%; Pred. No. 5.2e-14;
Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1 APTSSSTKKTQLQLEHLLDLQMLNGINN 30
DB      21 APTSSSTKKTQLQLEHLLDLQMLNGINN 50

RESULT 7
IL2_MACNE
ID IL2_MACNE STANDARD; PRT; 154 AA.
AC P68291; P51498;
DT 01-OCT-1996 (Rel. 34, Created)
DT 01-OCT-1996 (Rel. 34, Last sequence update)
DT 25-OCT-2004 (Rel. 45, Last annotation update)
DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
GN Name=IL2;
OS Macaca nemestrina (Pig-tailed macaque).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
OC Cercopithecinae; Macaca.
OX NCBI_TaxID=9545;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=Blood;
RX MEDLINE=96003435; PubMed=7561102;
RA Villinger F.J., Brar S.S., Mayne A.E., Chikkala N., Ansari A.A.;
RT "Comparative sequence analysis of cytokine genes from human and
nonhuman primates.";
RL J. Immunol. 155:3946-3954 (1995).
CC -!- FUNCTION: Produced by T-cells in response to antigenic or
CC mitogenic stimulation, this protein is required for T-cell
CC proliferation and other activities crucial to regulation of the
CC immune response. Can stimulate B cells, monocytes, lymphokine-
CC activated killer cells, natural killer cells, and glioma cells (By
CC similarity).
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- SIMILARITY: Belongs to the IL-2 family.
CC
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC
CC EMBL; U19847; AAB60400.1; -.
CC HSP; P01585; I48.
CC InterPro; IPR009079; 4_helix_cytokine.
CC InterPro; IPR000779; Interleukin-2.
CC Pfam; PF00715; IL2; 1.
CC PRINTS; PR00265; INTERLEUKIN2.
CC SMART; SM00189; IL2; 1.
CC PROSITE; PS00424; INTERLEUKIN_2; 1.
CC Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
CC T-cell.
CC SIGNAL 1 20 By similarity.
CC CHAIN 21 154 Interleukin-2.
CC CARBOHYD 23 23 O-linked (GalNAc...) (By similarity).
CC DISULFID 78 126 By similarity.
CC SEQUENCE 154 AA; 17685 MW; 6AEB480F204BA49 CRC64;

Query Match 100.0%; Score 147; DB 1; Length 154;
Best Local Similarity 100.0%; Pred. No. 5.2e-14;
Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1 APTSSSTKKTQLQLEHLLDLQMLNGINN 30
DB      21 APTSSSTKKTQLQLEHLLDLQMLNGINN 50

RESULT 8
IL2_PAPAN
ID IL2_PAPAN STANDARD; PRT; 154 AA.
AC Q865Y1;
DT 10-OCT-2003 (Rel. 42, Created)
DT 10-OCT-2003 (Rel. 42, Last sequence update)
DT 05-JUL-2004 (Rel. 44, Last annotation update)
DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
GN Name=Il2; Synonyms=Il-2;
OS Papio anubis (Olive baboon).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;

```

OC Cercopithecinae; Papio.
 OX NCBI_TaxID=9555;
 RN [1]_SIMILARITY: Belongs to the IL-2 family.
 RP SEQUENCE FROM N.A.
 RA Villinger F.;
 RT "Nonhuman primate cytokines.";
 RL Submitted (FEB-2003) to the EMBL/GenBank/DBJ databases.
 CC -!- FUNCTION: Produced by T-cells in response to antigenic or
 CC mitogenic stimulation, this protein is required for T-cell
 CC proliferation and other activities crucial to regulation of the
 CC immune response. Can stimulate B cells, monocytes, lymphokine-
 CC activated killer cells, natural killer cells, and glioma cells (By
 CC similarity).
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- SIMILARITY: Belongs to the IL-2 family.
 CC
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use by non-profit institutions as long as its content is in no way
 CC modified and this statement is not removed. Usage by and for commercial
 CC entities requires a license agreement (See <http://www.isb-sib.ch/announce/>
 CC or send an email to license@isb-sib.ch).
 CC
 CC EMBL; AY234220; AA085333.1; -.
 DR HSP; P01585; IMA9.
 DR InterPro; IPR009079; 4_helix_cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN 2; 1.
 DR Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
 KW T-cell.
 FT SIGNAL 1 20 By similarity.
 FT CHAIN 21 154 Interleukin-2.
 FT DISULFID 78 126 By similarity.
 FT CARBOHYD 23 23 O-linked (GalNAc...) (By similarity).
 SQ SEQUENCE 154 AA; 17713 MW; 47F486BDF204AD6E CRC64;
 Query Match 100.0%; Score 147; DB 1; Length 154;
 Best Local Similarity 100.0%; Pred. No. 5.2e-14;
 Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 APTSSSTKKTQLQLEHLLDLQMLINGNN 30
 DB 21 APTSSSTKKTQLQLEHLLDLQMLINGNN 50
 RESULT 9
 IL2_SAISC
 ID IL2_SAISC STANDARD; PRT; 154 AA.
 AC Q8MKH2;
 DT 10-OCT-2003 (Rel. 42, Created)
 DT 10-OCT-2003 (Rel. 42, Last sequence update)
 DT 05-JUL-2004 (Rel. 44, Last annotation update)
 DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
 GN Name=IL2;
 OS Saimiri sciureus (Common squirrel monkey).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Platyrrhini; Cebidae; Saimiri.
 OX NCBI_TaxID=9521;
 RN [1]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=21972723; PubMed=11976788; DOI=10.1007/s00251-002-0443-y;
 RA Heraud J.M., Lavergne A., Kazanji M.;
 RT "Molecular cloning, characterization, and quantification of squirrel
 RT monkey (Saimiri sciureus) Th1 and Th2 cytokines.";
 RL Immunogenetics 54:20-29(2002).
 CC -!- FUNCTION: Produced by T-cells in response to antigenic or
 CC mitogenic stimulation, this protein is required for T-cell
 CC proliferation and other activities crucial to regulation of the

CC immune response. Can stimulate B cells, monocytes, lymphokine-
 CC activated killer cells, natural killer cells, and glioma cells (By
 CC similarity).
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- SIMILARITY: Belongs to the IL-2 family.
 CC
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use by non-profit institutions as long as its content is in no way
 CC modified and this statement is not removed. Usage by and for commercial
 CC entities requires a license agreement (See <http://www.isb-sib.ch/announce/>
 CC or send an email to license@isb-sib.ch).
 CC
 CC EMBL; AF294755; AAK92042.1; -.
 DR HSP; P01585; IMA9.
 DR InterPro; IPR009079; 4_helix_cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN 2; 1.
 DR Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
 KW T-cell.
 FT SIGNAL 1 20 By similarity.
 FT CHAIN 21 154 Interleukin-2.
 FT DISULFID 78 126 By similarity.
 FT CARBOHYD 23 23 O-linked (GalNAc...) (By similarity).
 SQ SEQUENCE 154 AA; 17657 MW; AA642BABBCA87569 CRC64;
 Query Match 98.6%; Score 145; DB 1; Length 154;
 Best Local Similarity 96.7%; Pred. No. 1e-13;
 Matches 29; Conservative 1; Mismatches 0; Indels 0; Gaps 0;
 QY 1 APTSSSTKKTQLQLEHLLDLQMLINGNN 30
 DB 21 APTSSSTKKTQLQLEHLLDLQMLINGNN 50
 RESULT 10
 Q7JFM2
 ID Q7JFM2 PRELIMINARY; PRT; 154 AA.
 AC Q7JFM2;
 DT 05-JUL-2004 (TrEMBLrel. 27, Created)
 DT 05-JUL-2004 (TrEMBLrel. 27, Last sequence update)
 DT 05-JUL-2004 (TrEMBLrel. 27, Last annotation update)
 DE IL-2.
 OS Aotus lemurinus (Northern gray-necked night monkey).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Platyrrhini; Cebidae; Aotidae; Aotus.
 OX NCBI_TaxID=43147;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Murillo L.A., Hernandez E., Echeverry S.J., Mendez J.A., Moreno A.,
 RA Pararoyo M.E.;
 RL Submitted (FEB-1997) to the EMBL/GenBank/DBJ databases.
 DR EMBL; U88364; AAD41534.1; -.
 DR GO; GO:0005576; C:extracellular; IEA.
 DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
 DR GO; GO:0006955; P:immune response; IEA.
 DR InterPro; IPR009079; 4_helix_cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN 2; 1.
 SQ SEQUENCE 154 AA; 17675 MW; AB752ABBADA96469 CRC64;
 Query Match 98.6%; Score 145; DB 2; Length 154;
 Best Local Similarity 96.7%; Pred. No. 1e-13;
 Matches 29; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQLEHLLLDLQMLNGINN 30
 Db 21 APTSSSTKKTQLEHLLLDLQMLNGINN 50

RESULT 11
 Q7JFM3 PRELIMINARY; PRT; 154 AA.
 ID Q7JFM3
 AC Q7JFM3
 DT 05-JUL-2004 (TReMBLrel. 27, Created)
 DT 05-JUL-2004 (TReMBLrel. 27, Last sequence update)
 DT 05-JUL-2004 (TReMBLrel. 27, Last annotation update)
 DE IL-2.
 OS Aotus nigriceps (Black-headed owl monkey).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Platyrrhini; Cebidae; Aotinae; Aotus.
 OX NCBI_TaxID=57175;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Murillo L.A., Hernandez E., Echeverry S.J., Mendez J.A., Moreno A.,
 RA Patarroyo M.E.;
 RL Submitted (FEB-1997) to the EMBL/GenBank/DBJ databases.
 DR EMBL; U88363; AAD41536.1; -
 DR GO; GO:0005576; C:extracellular; IEA.
 DR GO; GO:0005134; P:interleukin-2 receptor binding; IEA.
 DR GO; GO:0006955; P:immune response; IEA.
 DR InterPro; IPR009079; 4 helix cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 SQ SEQUENCE 154 AA; 17675 MW; AB752ABBADA96469 CRC64;

Query Match 98.6%; Score 145; DB 2; Length 154;
 Best Local Similarity 96.7%; Pred. No. 1e-13;
 Matches 29; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQLEHLLLDLQMLNGINN 30
 Db 21 APTSSSTKKTQLEHLLLDLQMLNGINN 50

RESULT 12
 Q7JFM4 PRELIMINARY; PRT; 154 AA.
 ID Q7JFM4
 AC Q7JFM4
 DT 05-JUL-2004 (TReMBLrel. 27, Created)
 DT 05-JUL-2004 (TReMBLrel. 27, Last sequence update)
 DT 05-JUL-2004 (TReMBLrel. 27, Last annotation update)
 DE IL-2.
 OS Aotus vociferans (Spix's owl monkey).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Platyrrhini; Cebidae; Aotinae; Aotus.
 OX NCBI_TaxID=57176;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Murillo L.A., Hernandez E., Echeverry S.J., Mendez J.A., Moreno A.,
 RA Patarroyo M.E.;
 RL Submitted (FEB-1997) to the EMBL/GenBank/DBJ databases.
 DR EMBL; U88362; AAD41537.1; -
 DR GO; GO:0005576; C:extracellular; IEA.
 DR GO; GO:0005134; P:interleukin-2 receptor binding; IEA.
 DR GO; GO:0006955; P:immune response; IEA.
 DR InterPro; IPR009079; 4 helix cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.

SQ SEQUENCE 154 AA; 17675 MW; AB752ABBADA96469 CRC64;

Query Match 98.6%; Score 145; DB 2; Length 154;
 Best Local Similarity 96.7%; Pred. No. 1e-13;
 Matches 29; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQLEHLLLDLQMLNGINN 30
 Db 21 APTSSSTKKTQLEHLLLDLQMLNGINN 50

RESULT 13
 Q7JFM5 PRELIMINARY; PRT; 154 AA.
 ID Q7JFM5
 AC Q7JFM5
 DT 05-JUL-2004 (TReMBLrel. 27, Created)
 DT 05-JUL-2004 (TReMBLrel. 27, Last sequence update)
 DT 05-JUL-2004 (TReMBLrel. 27, Last annotation update)
 DE IL-2.
 OS Aotus nancymae (Ma's night monkey).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Platyrrhini; Cebidae; Aotinae; Aotus.
 OX NCBI_TaxID=37293;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Murillo L.A., Hernandez E., Echeverry S.J., Mendez J.A., Moreno A.,
 RA Patarroyo M.E.;
 RL Submitted (FEB-1997) to the EMBL/GenBank/DBJ databases.
 DR EMBL; U88361; AAD41535.1; -
 DR GO; GO:0005576; C:extracellular; IEA.
 DR GO; GO:0005134; P:interleukin-2 receptor binding; IEA.
 DR GO; GO:0006955; P:immune response; IEA.
 DR InterPro; IPR009079; 4 helix cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 SQ SEQUENCE 154 AA; 17675 MW; AB752ABBADA96469 CRC64;

Query Match 98.6%; Score 145; DB 2; Length 154;
 Best Local Similarity 96.7%; Pred. No. 1e-13;
 Matches 29; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQLEHLLLDLQMLNGINN 30
 Db 21 APTSSSTKKTQLEHLLLDLQMLNGINN 50

RESULT 14
 Q9XS38 PRELIMINARY; PRT; 154 AA.
 ID Q9XS38
 AC Q9XS38
 DT 01-NOV-1999 (TReMBLrel. 12, Created)
 DT 01-NOV-1999 (TReMBLrel. 12, Last sequence update)
 DT 01-MAR-2004 (TReMBLrel. 26, Last annotation update)
 DE IL-2.
 OS Papio hamadryas (Hamadryas baboon).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
 OC Cercopithecinae; Papio.
 OX NCBI_TaxID=9557;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Murillo L.A., Hernandez E., Echeverry S.J., Mendez J.A., Moreno A.,
 RA Patarroyo M.E.;
 RL Submitted (FEB-1997) to the EMBL/GenBank/DBJ databases.
 DR EMBL; U88365; AAD41538.1; -
 DR HSSP; P60568; IIRL.
 DR HSSP; P605576; C:extracellular; IEA.
 DR GO; GO:0005576; C:extracellular; IEA.
 DR GO; GO:0005134; P:interleukin-2 receptor binding; IEA.
 DR GO; GO:0006955; P:immune response; IEA.

O-linked (GalNAc. . .) (By similarity).

FT DISULFID 78 126 By similarity.
 FT VARIANT 25 25 R -> S.
 FT VARIANT 74 74 K -> E.
 SQ SEQUENCE 154 AA; 17754 MW; 9FE551814204BA48 CRC64;

Query Match 96.6%; Score 142; DB 1; Length 154;
 Best Local Similarity 96.7%; Pred. No. 3e-13;
 Matches 29; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 1 APTSSSTKTQLEHLLDLQMLINGINN 30
 DB 21 APTSSSTKTQLEHLLDLQMLINGINN 50

RESULT 18

Q6NZ91 PRELIMINARY; PRT; 153 AA.
 AC Q6NZ91;
 DT 05-JUL-2004 (TrEMBLrel. 27, Created)
 DT 05-JUL-2004 (TrEMBLrel. 27, Last sequence update)
 DE Interleukin 2.
 GN Name=IL2;
 OS Homo sapiens (Human).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Euthera; Primates; Catarrhini; Hominidae; Homo.
 OX NCBI_TaxID=9606;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE=PCR rescued clones;
 RX MEDLINE=22388257; PubMed=12477932; DOI=10.1073/pnas.242603899;
 RA Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
 RA Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
 RA Altshuler S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
 RA Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
 RA Diachenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
 RA Stapleton M., Soares M.B., Bonaldo M.F., Casavant T.L., Scheetz T.E.,
 RA Brownstein M.J., Udwin T.B., Toshiyuki S., Carninci P., Prange C.,
 RA Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullaly S.J.,
 RA Bosak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
 RA Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
 RA Villalón D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
 RA Fahey J., Helton E., Kettman M., Madan A., Rodriguez S., Sanchez A.,
 RA Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
 RA Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
 RA Rodriguez A.C., Grimwood J., Schmutz J., Myers R.M., Butterfield Y.S.,
 RA Krzywinski M.I., Skalska U., Smalusz D.E., Schnerch A., Schein J.E.,
 RA Jones S.J., Marra M.A.;
 RT "Generation and initial analysis of more than 15,000 full-length human
 and mouse cDNA sequences."
 RL Proc. Natl. Acad. Sci. U.S.A. 99:16899-16903(2002).
 RN [2]
 RP SEQUENCE FROM N.A.
 RC TISSUE=PCR rescued clones;
 RA Strausberg R.;
 RL Submitted (FEB-2004) to the EMBL/GenBank/DBJ databases.
 DR EMBL; BC066256; AAH66256.1; --
 DR GO; GO:0005576; C:extracellular; IEA.
 DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
 DR GO; GO:0006955; P:immune response; IEA.
 DR InterPro; IPR009079; 4 helix cytokine.
 DR InterPro; IPR00779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN 2; 1.
 SQ SEQUENCE 153 AA; 17644 MW; 59F9980409964F84 CRC64;

Query Match 93.2%; Score 137; DB 2; Length 153;
 Best Local Similarity 96.7%; Pred. No. 1.7e-12;
 Matches 29; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 1 APTSSSTKTQLEHLLDLQMLINGINN 30
 DB 21 ALTSSSTKTQLEHLLDLQMLINGINN 50

RESULT 19

Q13169 PRELIMINARY; PRT; 156 AA.
 AC Q13169;
 DT 01-NOV-1996 (TrEMBLrel. 01, Created)
 DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
 DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
 DE Interleukin 2.
 GN Name=IL2;
 OS Homo sapiens (Human).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Euthera; Primates; Catarrhini; Hominidae; Homo.
 OX NCBI_TaxID=9606;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Xu D., Wu Y., Chen J., Yu L., Zhong M., Hui Y., Qu H.;
 RT "Expression of human IL-2 from gene transferred mouse melanoma cells
 and its effect on the growth of mouse melanoma."
 RL Chin. J. Microbiol. Immunol. 13:78-82(1993).
 RN [2]
 RP SEQUENCE FROM N.A.
 RA Xu L.;
 RL Submitted (APR-1995) to the EMBL/GenBank/DBJ databases.
 DR EMBL; U25676; AAA70092.1; --
 DR HSP; P60568; IIRL.
 DR GO; GO:0005576; C:extracellular; TAS.
 DR GO; GO:0005134; F:interleukin-2 receptor binding; TAS.
 DR GO; GO:0019209; P:kinase activator activity; TAS.
 DR GO; GO:0006956; P:anti-apoptosis; TAS.
 DR GO; GO:0007267; P:cell-cell signaling; TAS.
 DR GO; GO:0006955; P:immune response; TAS.
 DR GO; GO:0030101; P:natural killer cell activation; TAS.
 DR GO; GO:0030307; P:positive regulation of cell growth; TAS.
 DR GO; GO:0030284; P:positive regulation of cell proliferation; TAS.
 DR GO; GO:0030217; P:T-cell differentiation; TAS.
 DR InterPro; IPR009079; 4 helix cytokine.
 DR InterPro; IPR00779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN 2; 1.
 SQ SEQUENCE 156 AA; 18002 MW; 8E0452D43B336389 CRC64;

Query Match 92.2%; Score 135.5; DB 2; Length 156;
 Best Local Similarity 90.9%; Pred. No. 2.9e-12;
 Matches 30; Conservative 0; Mismatches 0; Indels 3; Gaps 1;

QY 1 APTSSSTKTQLEHLLDLQMLINGINN 30
 DB 21 APTSSSTKTQLEHLLDLQMLINGINN 53

RESULT 20

Q16334 PRELIMINARY; PRT; 139 AA.
 AC Q16334;
 DT 01-NOV-1996 (TrEMBLrel. 01, Created)
 DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
 DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
 DE IL-2 protein (Fragment).
 GN Name=IL-2;
 OS Homo sapiens (Human).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Euthera; Primates; Catarrhini; Hominidae; Homo.
 OX NCBI_TaxID=9606;
 RN [1]
 RP SEQUENCE FROM N.A.

```

RX MEDLINE=95239150; PubMed=7722480;
RA Bizenberg O., Faber-Elman A., Lotan M., Schwartz M.;
RT "Interleukin-2 transcripts in human and rodent brains: possible
expression by astrocytes.";
RL J. Neurochem. 64:1928-1936(1995).
DR EMBL; S77835; AAD14264.1; -.
DR HSP; P60568; IIRL.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0003134; F:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR009079; 4 helix cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN_2; 1.
FT NON_TER 139 139
SQ SEQUENCE 139 AA; 15986 MW; 731FBA406D0C63C5 CRC64;

Query Match 91.2%; Score 134; DB 2; Length 139;
Best Local Similarity 93.3%; Pred. No. 4.3e-12;
Matches 28; Conservative 0; Mismatches 2; Indels 0; Gaps 0;

QY 1 APTSSSTKTKTQLQLEHLLDLQMLGNN 30
|||||
DB 17 APTSSSTKTKTQLXLEHLLDLQMLXGNN 46
|||||

RESULT 21
IL2_MIRAN
ID IL2_MIRAN STANDARD; PRT; 154 AA.
AC O62641;
DT 15-DEC-1998 (Rel. 37, Created)
DT 15-DEC-1998 (Rel. 37, Last sequence update)
DT 05-JUL-2004 (Rel. 44, Last annotation update)
DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
GN Name=IL2;
OS Mirounga angustirostris (Northern elephant seal).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Carnivora; Pinnipedia; Phocidae; Mirounga.
OX NCBI_TaxID=9716;
RN [1]_
RP SEQUENCE FROM N.A.
RX MEDLINE=98136706; PubMed=9476229;
RA Shoda L.K.M., Brown W.C., Rice-Ficht A.C.;
RT "Sequence and characterization of phocine interleukin 2.";
RL J. Wildl. Dis. 34:81-90(1998).
CC -!- FUNCTION: Produced by T-cells in response to antigenic or
CC mitogenic stimulation, this protein is required for T-cell
CC proliferation and other activities crucial to regulation of the
CC immune response. Can stimulate B cells, monocytes, lymphokine-
CC activated killer cells, natural killer cells, and glioma cells (By
CC similarity).
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- SIMILARITY: Belongs to the IL-2 family.
CC
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC
CC EMBL; U79187; AAC12258.1; -.
CC HSP; P01585; 1M49.
CC InterPro; IPR009079; 4 helix cytokine.
CC InterPro; IPR000779; Interleukin-2.
CC Pfam; PF00715; IL2; 1.
CC PRINTS; PR00265; INTERLEUKIN2.
CC ProDom; PD003649; Interleukin-2; 1.
CC SMART; SM00189; IL2; 1.
KW InterPro; IPR009079; 4 helix cytokine.
FT SIGNAL 1 20
FT CHAIN 21 154
FT DISULFID 78 126
FT By similarity.

```

```

DR PROSITE; PS00424; INTERLEUKIN_2; 1.
KW Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
T-cell.
FT SIGNAL 1 20
FT CHAIN 21 154
FT CARBOHYD 23 23
FT DISULFID 78 126
FT By similarity.
SQ SEQUENCE 154 AA; 17661 MW; 0C92337A4B16B6B CRC64;

Query Match 78.9%; Score 116; DB 1; Length 154;
Best Local Similarity 73.3%; Pred. No. 2.6e-09;
Matches 22; Conservative 6; Mismatches 2; Indels 0; Gaps 0;

QY 1 APTSSSTKTKTQLQLEHLLDLQMLGNN 30
|||||
DB 21 APTSSSTKTKTQLQLEHLLDLRLGNN 50
|||||

RESULT 22
IL2_FELCA
ID IL2_FELCA STANDARD; PRT; 154 AA.
AC Q07885;
DT 01-OCT-1994 (Rel. 30, Created)
DT 01-OCT-1994 (Rel. 30, Last sequence update)
DT 05-JUL-2004 (Rel. 44, Last annotation update)
DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
GN Name=IL2;
OS Felis silvestris catus (Cat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Carnivora; Fissipedia; Felidae; Felis.
OX NCBI_TaxID=9685;
RN [1]_
RP SEQUENCE FROM N.A.
RX MEDLINE=93356765; PubMed=8352761;
RA Cozzi P.J., Padrid P.A., Takeda J., Alegre M.-A., Yuhki N., Leff A.R.;
RT "Sequence and functional characterization of feline interleukin 2.";
RL Biochem. Biophys. Res. Commun. 194:1038-1043(1993).
RN [2]_
RP SEQUENCE FROM N.A.
RA Litman R., Gibbs C., Good R.A., Day N.K.;
RL Submitted (NOV-1994) to the EMBL/GenBank/DBSJ databases.
CC -!- FUNCTION: Produced by T-cells in response to antigenic or
CC mitogenic stimulation, this protein is required for T-cell
CC proliferation and other activities crucial to regulation of the
CC immune response. Can stimulate B cells, monocytes, lymphokine-
CC activated killer cells, natural killer cells, and glioma cells.
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- SIMILARITY: Belongs to the IL-2 family.
CC
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC
CC EMBL; L19402; AAA02865.1; -.
CC EMBL; L25408; AAA51431.1; -.
CC PIR; JN0698; JN0698.
CC HSP; P01585; 1M49.
CC InterPro; IPR009079; 4 helix cytokine.
CC InterPro; IPR000779; Interleukin-2.
CC Pfam; PF00715; IL2; 1.
CC PRINTS; PR00265; INTERLEUKIN2.
CC ProDom; PD003649; Interleukin-2; 1.
CC SMART; SM00189; IL2; 1.
KW InterPro; IPR009079; 4 helix cytokine.
FT SIGNAL 1 20
FT CHAIN 21 154
FT DISULFID 78 126
FT By similarity.

```

```

FT CARBOHYD 111 111 N-linked (GlcNAc...) (Potential).
FT CONFLICT 3 4 KI -> RM (in Ref. 2).
FT CONFLICT 150 150 F -> I (in Ref. 2).
SQ SEQUENCE 154 AA; 17653 MW; 2E71E3BD8B9665EF CRC64;

Query Match 77.6%; Score 114; DB 1; Length 154;
Best Local Similarity 73.3%; Pred. No. 5.2e-09;
Matches 22; Conservative 5; Mismatches 3; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQQLQLEHLLDLQMLINGNN 30
  |||||:|||||:|||||:|||||:|||||:
Db 21 APASSSTKKTQQLQLEHLLDLQMLINGNN 50

RESULT 23
Q9XT83 PRELIMINARY; PRT; 155 AA.
AC Q9XT83;
DT 01-NOV-1999 (TrEMBLrel. 12, Created)
DT 01-NOV-1999 (TrEMBLrel. 12, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Interleukin 2.
OS Halichoerus grypus (Gray seal).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Carnivora; Pinnipedia; Phocidae; Halichoerus.
OX NCBI_TaxID=9711;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=92221046; PubMed=10206205; DOI=10.1016/S0165-2427(99)00009-4;
RA St-Laurent G., Beliveau C., Archambault D.;
RT "Molecular cloning and phylogenetic analysis of beluga whale
RT (Delphinapterus leucas) and grey seal (Halichoerus grypus) interleukin
RT 2.";
RL Vet. Immunol. Immunopathol. 67:385-394(1999).
DR EMBL; AF072871; RAD40848.1; -.
DR HSSP; P60588; IIRL.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR000799; 4_helix_cytokine.
DR InterPro; IPR000799; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
FT NON_TER 1
FT NON_TER 66
SQ SEQUENCE 155 AA; 17860 MW; F18F49AC672241A CRC64;

Query Match 73.8%; Score 108.5; DB 2; Length 155;
Best Local Similarity 74.2%; Pred. No. 3.6e-08;
Matches 23; Conservative 5; Mismatches 2; Indels 1; Gaps 1;

QY 1 AP-TSSSTKKTQQLQLEHLLDLQMLINGNN 30
  |||||:|||||:|||||:|||||:|||||:
Db 21 APTSSSTKKTQQLQLEHLLDLQMLINGNN 51

RESULT 24
Q9BG74 PRELIMINARY; PRT; 66 AA.
AC Q9BG74;
DT 01-JUN-2001 (TrEMBLrel. 17, Created)
DT 01-JUN-2001 (TrEMBLrel. 17, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Interleukin 2 (Fragment).
OS Canis familiaris (Dog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.
OX NCBI_TaxID=9615;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=Blood;
RA Markus S., Groene A., Baumgaertner W.;

```

```

RL Submitted (JAN-2001) to the EMBL/GenBank/DBJ databases.
DR EMBL; AF333117; AAK01437.1; -.
DR HSSP; P60568; IIRL.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR000799; 4_helix_cytokine.
DR InterPro; IPR000799; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
FT NON_TER 1
FT NON_TER 66
SQ SEQUENCE 66 AA; 7389 MW; 22A893F79DA2AE47 CRC64;

Query Match 73.1%; Score 107.5; DB 2; Length 66;
Best Local Similarity 71.0%; Pred. No. 1.9e-08;
Matches 22; Conservative 6; Mismatches 2; Indels 1; Gaps 1;

QY 1 AP-TSSSTKKTQQLQLEHLLDLQMLINGNN 30
  |||||:|||||:|||||:|||||:|||||:
Db 14 APTSSSTKKTQQLQLEHLLDLQMLINGNN 44

RESULT 25
IL2 CANFA
ID IL2 CANFA STANDARD; PRT; 155 AA.
AC Q29416; Q28249;
DT 15-JUL-1998 (Rel. 36, Created)
DT 15-JUL-1998 (Rel. 36, Last sequence update)
DT 05-JUL-2004 (Rel. 44, Last annotation update)
DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
GN Name=IL2;
OS Canis familiaris (Dog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.
OX NCBI_TaxID=9615;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=XBRED21/12/93; TISSUE=Lymph node;
RX MEDLINE=95337423; PubMed=7612930;
RA Dunham S.P., Argyle D.J., Onions D.E.;
RT "The isolation and sequence of canine interleukin-2.";
RL DNA Seq. 5:177-180(1995).
RN [2]
RP SEQUENCE FROM N.A.
RX MEDLINE=96016696; PubMed=8571541; DOI=10.1016/0165-2427(94)05400-M;
RA Sonberg R.L., Pullen R.P., Casal M.L., Patterson D.F., Felsburg P.J.,
RA Henthorn P.S.;
RT "A single nucleotide insertion in the canine interleukin-2 receptor
RT gamma chain results in X-linked severe combined immunodeficiency
RT disease.";
RL Vet. Immunol. Immunopathol. 47:203-213(1995).
RN [3]
RP SEQUENCE FROM N.A.
RC STRAIN=Beagle; TISSUE=Spleen;
RX MEDLINE=95347614; PubMed=7622066; DOI=10.1016/0378-1119(95)00078-K;
RA Knapp D.W., Williams J.S., Andrisani O.M.;
RT "Cloning of the canine interleukin-2-encoding cDNA.";
RL Gene 159:281-282(1995).
CC -!- FUNCTION: Produced by T-cells in response to antigenic or
CC mitogenic stimulation, this protein is required for T-cell
CC proliferation and other activities crucial to regulation of the
CC immune response. Can stimulate B cells, monocytes, lymphokine-
CC activated killer cells, natural killer cells, and glioma cells.
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- SIMILARITY: Belongs to the IL-2 family.
CC -----
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL Outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way

```

CC modified and this statement is not removed. Usage by and for commercial
 CC entities requires a license agreement. (See <http://www.isb-sib.ch/announce/>
 CC or send an email to license@isb-sib.ch).

 DR EMBL; D30710; BAA06378.1; -;
 DR EMBL; U28141; AAA68969.1; -;
 DR EMBL; U11689; AAA75360.1; -;
 DR HSSP; P01585; 3INK.
 DR InterPro; IPR009079; 4 helix cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 KW Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
 T-cell.
 FT SIGNAL 1 20 By similarity.
 FT CHAIN 21 155 Interleukin-2.
 FT CARBOHYD 24 24 O-linked (GalNAc...) (By similarity).
 FT CARBOHYD 112 112 N-linked (GlcNAc...) (Potential).
 FT DISULFID 79 127 By similarity.
 FT CONFLICT 4 4 M -> I (in Ref. 3).
 FT CONFLICT 37 37 Q -> R (in Ref. 3).
 FT CONFLICT 151 151 F -> Y (in Ref. 3).
 FT CONFLICT 154 154 L -> M (in Ref. 3).
 FT CONFLICT 155 AA; 17668 MW; D13E486B7F4AC1D CRC64;
 SQ SEQUENCE 155 AA; 17668 MW; D13E486B7F4AC1D CRC64;

Query Match 73.1%; Score 107.5; DB 1; Length 155;
 Best Local Similarity 71.0%; Pred. No. 5.1e-08;
 Matches 22; Conservative 6; Mismatches 2; Indels 1; Gaps 1;
 QY 1 AP-TSSSTKKTQLQLEHLLDQLMILNGINN 30
 DB 21 APTSSSTKETEQQMEQLLDQLLLGVNN 51

RESULT 26
 Q9TV12 ID Q9TV12 PRELIMINARY; PRT; 79 AA.
 AC Q9TV12;
 DT 01-MAY-2000 (TRENBLrel. 13, Created)
 DT 01-MAY-2000 (TRENBLrel. 13, Last sequence update)
 DT 01-MAR-2004 (TRENBLrel. 26, Last annotation update)
 DE Interleukin-2 (Fragment).
 OS Canis familiaris (Dog).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.
 OC NCBI_TaxID=9615;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA German A.J., Helpe C.R., Harley R., Hall E.J., Day M.J.;
 RL Submitted (SEP-1998) to the EMBL/GenBank/DBJ databases.
 DR EMBL; AF091131; AAD46989.1; -;
 DR HSSP; P60568; 1IRL.
 DR GO; GO:0005576; C:extracellular; IEA.
 DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
 DR GO; GO:0006955; P:immune response; IEA.
 DR InterPro; IPR009079; 4 helix cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 FT NON TER 1
 FT NON TER 79 79
 SQ SEQUENCE 79 AA; 9087 MW; 83079BF8FA659BD CRC64;

Query Match 72.8%; Score 107; DB 2; Length 79;
 Best Local Similarity 71.4%; Pred. No. 2.8e-08;
 Matches 20; Conservative 6; Mismatches 2; Indels 0; Gaps 0;

QY 3 TSSSTKKTQLQLEHLLDQLMILNGINN 30
 DB 7 TSSSTKETEQQMEQLLDQLLLGVNN 34
 RESULT 27
 Q80XG3 ID Q80XG3 PRELIMINARY; PRT; 152 AA.
 AC Q80XG3;
 DT 01-JUN-2003 (TRENBLrel. 24, Created)
 DT 01-JUN-2003 (TRENBLrel. 24, Last sequence update)
 DT 01-MAR-2004 (TRENBLrel. 26, Last annotation update)
 DE Interleukin-2 (Fragment).
 GN Name=IL2;
 OS Peromyscus maniculatus (Deer mouse).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Sigmodontinae;
 OC Peromyscus.
 OC NCBI_TaxID=10042;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Schoutz T., Buniger A., Davenport B., Hegg T.;
 RT "Cloning of deer mouse IL-2, IL-12 p35, IL-21, GM-CSF, CCL3 and CCL4
 RT cDNAs";
 RL Submitted (MAR-2003) to the EMBL/GenBank/DBJ databases.
 DR EMBL; AY247760; AAP04419.1; -;
 DR HSSP; P60568; 1IRL.
 DR GO; GO:0005576; C:extracellular; IEA.
 DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
 DR GO; GO:0006955; P:immune response; IEA.
 DR InterPro; IPR009079; 4 helix cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 FT NON TER 152 152
 SQ SEQUENCE 152 AA; 17095 MW; 798D13514AD0CC93 CRC64;

Query Match 72.8%; Score 107; DB 2; Length 152;
 Best Local Similarity 70.0%; Pred. No. 5.9e-08;
 Matches 21; Conservative 5; Mismatches 4; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQLQLEHLLDQLMILNGINN 30
 DB 21 APTSSSTKETEQQMEQLLDQLLLGVNN 50
 RESULT 28
 IL2_RABIT ID IL2_RABIT STANDARD; PRT; 153 AA.
 AC O77620;
 DT 15-JUL-1999 (Rel. 38, Created)
 DT 15-JUL-1999 (Rel. 38, Last sequence update)
 DT 05-JUL-2004 (Rel. 44, Last annotation update)
 DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
 GN Name=IL2;
 OS Oryctolagus cuniculus (Rabbit).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
 OC NCBI_TaxID=9986;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE=Lymph node;
 RX MEDLINE=20304414; PubMed=10843729; DOI=10.1006/cyto.1999.0658;
 RA Perkins H.D., van Leeuwen B.H., Hardy C.M., Kerr P.J.;
 RT "The complete cDNA sequences of IL-2, IL-4, IL-6 and IL-10 from the
 RT European rabbit (Oryctolagus cuniculus).";
 RL Cytokine 12:555-565(2000).
 CC -!- FUNCTION: Produced by T-cells in response to antigenic or
 CC mitogenic stimulation, this protein is required for T-cell
 CC proliferation and other activities crucial to regulation of the

	Query Match	72.1%; Score 106; DB 2; Length 133;	
	Best Local Similarity	72.4%; Pred. No. 7.2e-08;	
	Matches	21; Conservative	5; Mismatches 3; Indels 0; Gaps 0;
Qy	1 APTSSSTKTQLQHLLLDLQMLNGIN 29 :: :: :: :		
Dd	21 APTSSSTKETQEQLDQLDLLDLQVLLGKN 49 :: :: :: :		
RESULT 30			
Q923T2	PRELIMINARY;	PRT; 155 AA.	
ID Q923T2	AC Q923T2		
DT 01-DEC-2001	(TrEMBLrel. 19, Created)		
DT 01-DEC-2001	(TrEMBLrel. 19, Last sequence update)		
DT 01-MAR-2004	(TrEMBLrel. 26, Last annotation update)		
DE Interleukin 2			
OS Sigmodon hispidus (Hispid cotton rat).			
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;			
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Sigmodontinae;			
NCBI_TaxID=42415;			
[1]			
SEQUENCE FROM N.A.			
RN Darnell M.R., Pletneva L.M., Langley R.J., Blanco J.C., Prince G.A.;			
RP Submitted (JUL-2001) to the EMBI/GenBank/DBJ databases.			
RL EMBL; AF398549; AAK94012.1; -.			
DR HSP; P60568; IIRL			
DR GO; GO:0005576; C:extracellular; IEA.			
DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.			
DR GO; GO:0006955; P:immune response; IEA.			
DR Pfam; PF00715; IL2; 1.			
DR PRINTS; PR00265; INTERLEUKIN2.			
DR PRODOM; PD003649; Interleukin-2; 1.			
DR SMART; SM00189; IL2; 1.			
DR PROSITE; PS00424; INTERLEUKIN_2; 1.			
SQ SEQUENCE 155 AA; 17627 MW; ACADEA865E93291 CRC64;			
Query Match	72.1%; Score 106; DB 2; Length 155;		
Best Local Similarity	73.3%; Pred. No. 8.6e-08;		
Matches	22; Conservative	3; Mismatches 5; Indels 0; Gaps 0;	
Qy	1 APTSSSTKTQLQHLLLDLQMLNGIN 30 :: :: :: :		
Dd	21 APTSSSTKETQEQLHLLLDLQVLLRGK 50 :: :: :: :		
RESULT 31			
O703Z9	PRELIMINARY;	PRT; 138 AA.	
ID O703Z9	AC O703Z9		
DT 01-AUG-1998	(TrEMBLrel. 07, Created)		
DT 01-AUG-1998	(TrEMBLrel. 07, Last sequence update)		
DT 01-MAR-2004	(TrEMBLrel. 26, Last annotation update)		
DE Interleukin-2 (Fragment)			
OS Mesocricetus auratus (Golden hamster).			
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;			
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Cricetinae;			
Mesocricetus.			
NCBI_TaxID=10036;			
[1]			
SEQUENCE FROM N.A.			
RN TISSUE=Spleen;			
RC MEDLINE=98234044; PubMed=9573100;			
RA Melby P.C., Tryon V.V., Chandrasekar B., Freeman G.L.;			
RT "Cloning of Syrian hamster (Mesocricetus auratus) cytokine cDNAs and			
RT analysis of cytokine mRNA expression in experimental visceral			
RT leishmaniasis.";			
RL Infect. Immun. 66:2135-2142(1998).			
DR EMBL; AF046212; AAC40097.1; -.			
HSP; P60568; IIRL.			
GO; GO:0005576; C:extracellular; IEA.			

DR GO: GO:0005134; F:interleukin-2 receptor binding; IEA.
 DR GO: GO:0006955; P:immune response; IEA.
 DR InterPro: IPR009079; 4 helix cytokine.
 DR InterPro: IPR000779; Interleukin-2.
 DR Pfam: PF00715; IL2; 1.
 DR PRINTS: PR00265; INTERLEUKIN2.
 DR ProDom: PD003649; Interleukin-2; 1.
 DR SMART: SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 FT NON_TER 1
 FT NON_TER 138
 FT SEQUENCE 138 AA; 15739 MW; 3510329958670779 CRC64;

Query Match 70.1%; Score 103; DB 2; Length 138;
 Best Local Similarity 73.3%; Pred. No. 2.1e-07;
 Matches 22; Conservative 2; Mismatches 6; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQLQLEHLLDLQMLNGINN 30
 ||||| I: ||||| : |||||
 Db 14 APTSSSKKTQQLQLEHLLDLQMLNGINN 43

RESULT 32

IL2_RAT
 ID IL2_RAT STANDARD; PRT; 155 AA.
 AC P17108;
 DT 01-AUG-1990 (Rel. 15, Created)
 DT 01-AUG-1990 (Rel. 15, Last sequence update)
 DT 05-JUL-2004 (Rel. 44, Last annotation update)
 DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
 GN Name=IL2; Synonyms=IL-2;
 OS Rattus norvegicus (Rat).
 OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
 OX NCBI_TaxID=10116;
 RN [1]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=89339608; PubMed=2788130;
 RA McKnight A.J., Mason D.W., Barclay A.N.;
 RT "Sequence of rat interleukin 2 and anomalous binding of a mouse
 interleukin 2 cDNA probe to rat MHC class II-associated invariant
 chain mRNA.";
 RL Immunogenetics 30:145-147(1989).
 CC -!- FUNCTION: Produced by T-cells in response to antigenic or
 mitogenic stimulation, this protein is required for T-cell
 proliferation and other activities crucial to regulation of the
 immune response. Can stimulate B cells, monocytes, lymphokine-
 activated killer cells, natural killer cells, and glioma cells.
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- SIMILARITY: Belongs to the IL-2 family.

 CC This SWISS-PROT entry is copyright. It is produced through a collaboration
 between the Swiss Institute of Bioinformatics and the EMBL outstation -
 the European Bioinformatics Institute. There are no restrictions on its
 use by non-profit institutions as long as its content is in no way
 modified and this statement is not removed. Usage by and for commercial
 entities requires a license agreement (See <http://www.isb-sib.ch/announce/>
 or send an email to license@isb-sib.ch).
 CC -----

EMBL; M22899; AAA41427.1; -;
 DR PIR; A45882; A31278.
 DR HSP; P01585; 1M49.
 DR RGD; 620047; IL2
 DR InterPro; IPR009079; 4 helix cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 DR Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
 T-cell.
 KW T-cell.
 FT SIGNAL 1 20 By similarity.

FT CHAIN 21 155 Interleukin-2.
 FT CARBOHYD 23 23 O-linked (GalNAc...) (By similarity).
 FT DISULFID 78 126 By similarity.
 SQ SEQUENCE 155 AA; 17632 MW; 67A8554A73BF30A0 CRC64;
 Query Match 66.0%; Score 97; DB 1; Length 155;
 Best Local Similarity 66.7%; Pred. No. 2e-06;
 Matches 20; Conservative 4; Mismatches 6; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQLQLEHLLDLQMLNGINN 30
 ||||| I: ||||| : |||||
 Db 21 APTSSPAKETQQLQLEHLLDLQMLNGIDN 50

RESULT 33

IL2_PIG
 ID IL2_PIG STANDARD; PRT; 154 AA.
 AC P26891;
 DT 01-AUG-1992 (Rel. 23, Created)
 DT 01-AUG-1992 (Rel. 23, Last sequence update)
 DT 05-JUL-2004 (Rel. 44, Last annotation update)
 DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
 GN Name=IL2;
 OS Sus scrofa (Pig).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Suina; Suidae; Sus.
 OX NCBI_TaxID=9823;
 RN [1]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=91274360; PubMed=2054386; DOI=10.1016/0167-4781(91)90019-I;
 RA Goodall J.C., Emery D.C., Bailey M., English L.S., Hall L.;
 RT "cDNA cloning of porcine interleukin 2 by polymerase chain reaction.";
 RL Biochim. Biophys. Acta 1089:257-258(1991).
 RN [2]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=91274360; PubMed=2054386; DOI=10.1016/0167-4781(91)90019-I;
 RA Goodall J.C., Emery D.C., Bailey M., English L.S., Hall L.;
 RT "cDNA cloning of porcine interleukin 2 by polymerase chain reaction.";
 RL Biochim. Biophys. Acta 1089:257-258(1991).
 RN [3]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=91274360; PubMed=2054386; DOI=10.1016/0167-4781(91)90019-I;
 RA Goodall J.C., Emery D.C., Bailey M., English L.S., Hall L.;
 RT "cDNA cloning of porcine interleukin 2 by polymerase chain reaction.";
 RL Biochim. Biophys. Acta 1089:257-258(1991).
 RN [3]
 RP Submitted (MAY-1991) to the EMBL/GenBank/DBJ databases.

 CC This SWISS-PROT entry is copyright. It is produced through a collaboration
 between the Swiss Institute of Bioinformatics and the EMBL outstation -
 the European Bioinformatics Institute. There are no restrictions on its
 use by non-profit institutions as long as its content is in no way
 modified and this statement is not removed. Usage by and for commercial
 entities requires a license agreement (See <http://www.isb-sib.ch/announce/>
 or send an email to license@isb-sib.ch).
 CC -----

EMBL; X56750; CAA40071.1; -;
 DR EMBL; X58428; CAA41330.1; -;
 DR EMBL; AB041935; BAB16110.1; -;
 DR PIR; S16241; S16241.
 DR HSP; P01585; 1M49.
 DR InterPro; IPR009079; 4 helix cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 DR Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
 KW Cytokine; Glycoprotein; Growth factor; Immune response; Signal;

KW T-cell.
 FT SIGNAL 1 20 By similarity.
 FT CHAIN 21 154 Interleukin-2.
 FT CARBOHYD 23 23 O-linked (GalNac...) (By similarity).
 FT DISULFID 78 126 By similarity.
 SQ SEQUENCE 154 AA; 17401 MW; F3B5E843DA3D3E1 CRC64;

 Query Match 65.3%; Score 96; DB 1; Length 154;
 Best Local Similarity 66.7%; Pred. No. 2.8e-06;
 Matches 20; Conservative 4; Mismatches 6; Indels 0; Gaps 0;

 QY 1 APTSSSTKTKTQLEHLHLLDLQMLNGINN 30
 DB 21 APTSSSTKTKTQLEHLHLLDLQMLNGINN 30

 RESULT 34
 IL2_MERUN STANDARD; PRT; 155 AA.
 AC Q8081;
 DT 01-OCT-1994 (Rel. 30, Last sequence update)
 DT 01-OCT-1994 (Rel. 30, Last sequence update)
 DT 05-JUL-2004 (Rel. 44, Last annotation update)
 DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
 GN Name=IL2;
 OS Meriones unguiculatus (Mongolian jird) (Mongolian gerbil).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Gerbillinae;
 OC Meriones.
 OX NCBI_TaxID=10047;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE=Spleen;
 RX MEDLINE=94174702; PubMed=8128610; DOI=10.1016/0165-2427(94)90015-9;
 RA Mai Z., Kousoulas K.G., Horohov D.W., Klei T.R.;
 RT "Cross-species PCR cloning of gerbil (Meriones unguiculatus) interleukin-2 cDNA and its expression in COS-7 cells.";
 RL Vet. Immunol. Immunopathol. 40:63-71(1994).
 CC -!- FUNCTION: Produced by T-cells in response to antigenic or mitogenic stimulation, this protein is required for T-cell proliferation and other activities crucial to regulation of the immune response. Can stimulate B cells, monocytes, lymphokine-activated killer cells, natural killer cells, and glioma cells.
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- SIMILARITY: Belongs to the IL-2 family.
 CC -----
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See <http://www.isb-sib.ch/announce/> or send an email to license@isb-sib.ch).
 CC -----
 CC EMBL; X68779; CAA48679.1; -.
 CC PIR; S33509; S33509.
 CC HSP; P01585; IMA9.
 CC InterPro; IPR009079; 4_helix_cytokine.
 CC InterPro; IPR000779; Interleukin-2.
 CC Pfam; PF00715; IL2; 1.
 CC PRINTS; PR00265; INTERLEUKIN2.
 CC ProDom; PD003649; Interleukin-2; 1.
 CC SMART; SM00189; IL2; 1.
 CC PROSITE; PS00424; INTERLEUKIN 2; 1.
 CC Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
 KW T-cell.
 FT SIGNAL 1 20 By similarity.
 FT CHAIN 21 155 Interleukin-2.
 FT CARBOHYD 23 23 O-linked (GalNac...) (By similarity).
 FT DISULFID 78 126 By similarity.
 SQ SEQUENCE 155 AA; 17602 MW; D0F74AAIA38ICDDA CRC64;

 Query Match 64.6%; Score 95; DB 1; Length 155;

Best Local Similarity 66.7%; Pred. No. 4e-06;
 Matches 20; Conservative 2; Mismatches 8; Indels 0; Gaps 0;

 QY 1 APTSSSTKTKTQLEHLHLLDLQMLNGINN 30
 DB 21 APTSSPAKEAQYLSQLLELDLQQLLRGINN 50

 RESULT 35
 Q865X2 PRELIMINARY; PRT; 154 AA.
 AC Q865X2;
 DT 01-JUN-2003 (TReMBLrel. 24, Created)
 DT 01-JUN-2003 (TReMBLrel. 24, Last sequence update)
 DT 01-MAR-2004 (TReMBLrel. 26, Last annotation update)
 DE Interleukin 2.
 GN Name=IL-2;
 OS Lama glama (Llama).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Tylopoda; Camelidae; Lama.
 OX NCBI_TaxID=9844;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Raadan O., Lee S.-., Yoshida R., Chang K.-., Ohashi K., Sugimoto C., Onuma M.;
 RL Submitted (APR-2003) to the EMBL/GenBank/DBJ databases.
 DR EMBL; AB107651; BAC75388.1; -.
 DR HSP; P60568; IIRL.
 DR GO; GO:0005576; C:extracellular; IEA.
 DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
 DR GO; GO:0006955; P:immune response; IEA.
 DR InterPro; IPR009079; 4_helix_cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN 2; 1.
 SQ SEQUENCE 154 AA; 17652 MW; -8020EC8DDB7BBA38 CRC64;

 Query Match 63.3%; Score 93; DB 2; Length 154;
 Best Local Similarity 66.7%; Pred. No. 7.9e-06;
 Matches 20; Conservative 3; Mismatches 7; Indels 0; Gaps 0;

 QY 1 APTSSSTKTKTQLEHLHLLDLQMLNGINN 30
 DB 21 APTLSSTKTKTQLEHLHLLDLQFLKEVNN 50

 RESULT 36
 IL2_HORSE STANDARD; PRT; 149 AA.
 AC P37997;
 DT 01-OCT-1994 (Rel. 30, Created)
 DT 01-NOV-1995 (Rel. 32, Last sequence update)
 DT 05-JUL-2004 (Rel. 44, Last annotation update)
 DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
 GN Name=IL2;
 OS Equus caballus (Horse).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Perissodactyla; Equidae; Equus.
 OX NCBI_TaxID=9796;
 RN [1]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=94160538; PubMed=8116217; DOI=10.1016/0165-2427(93)90070-K;
 RA Vandergriff E.V., Horohov D.W.;
 RT "Molecular cloning and expression of equine interleukin 2.";
 RL Vet. Immunol. Immunopathol. 39:395-406(1993).
 RN [2]
 RP SEQUENCE FROM N.A.
 RA Tavernor A.S., Allen W.R., Butcher G.W.;
 RL Submitted (NOV-1992) to the EMBL/GenBank/DBJ databases.
 CC -!- FUNCTION: Produced by T-cells in response to antigenic or

mitogenic stimulation, this protein is required for T-cell proliferation and other activities crucial to regulation of the immune response. Can stimulate B cells, monocytes, lymphokine-activated killer cells, natural killer cells, and glioma cells.

-!- SUBCELLULAR LOCATION: Secreted.

-!- SIMILARITY: Belongs to the IL-2 family.

This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL Outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See <http://www.isb-sib.ch/announce/> or send an email to license@isb-sib.ch).

EMBL; L06009; AAA20134.1; -
 EMBL; X69393; CAA49190.1; -
 PIR; S31391; S31391.
 HSSP; P01585; 1M47.
 InterPro; IPR009079; 4_helix_cytokine.
 InterPro; IPR000779; Interleukin-2.
 Pfam; PF00715; IL2; 1.
 PRINTS; PR00265; INTERLEUKIN2.
 ProDom; PD003649; Interleukin-2; 1.
 SMART; SM00189; IL2; 1.
 PROSITE; PS00424; INTERLEUKIN_2; 1.
 Cytokine; Glycoprotein; Growth factor; Immune response; Signal; T-cell.

SIGNAL 1 20 By similarity.
 CHAIN 21 149 Interleukin-2.
 FT DISULFID 78 121 By similarity.
 FT CARBOHYD 23 23 O-linked (GalNAc...) (By similarity).
 FT CARBOHYD 106 106 N-linked (GlcNAc...) (Potential).
 FT CONFLICT 3 3 R -> K (in Ref. 2).
 FT CONFLICT 8 8 S -> A (in Ref. 2).
 FT CONFLICT 59 59 I -> M (in Ref. 2).
 FT CONFLICT 125 125 N -> D (in Ref. 2).
 FT CONFLICT 128 128 E -> G (in Ref. 2).
 FT CONFLICT 145 145 I -> F (in Ref. 2).
 FT CONFLICT 148 148 L -> M (in Ref. 2).
 SQ SEQUENCE 149 AA; 17086 MW; 051BB8C47A0114FC CRC64;

Query Match 62.6%; Score 92; DB 1; Length 149;
 Best Local Similarity 56.7%; Pred. No. 1,1e-05;
 Matches 17; Conservative 8; Mismatches 5; Indels 0; Gaps 0;

QY 1 APTSSSTKTKTQLQLEHLLDLQMLNGINN 30
 Db 21 APTSSSKRETQQLKQLQMDLKLLEGVNN 50

RESULT 37
 Q9UCF5 PRELIMINARY; PRT; 23 AA.
 AC Q9UCF5;
 DT 01-MAY-2000 (TrEMBLrel. 13, Created)
 DT 01-MAY-2000 (TrEMBLrel. 13, Last sequence update)
 DT 01-JUN-2000 (TrEMBLrel. 14, Last annotation update)
 DE Interleukin 2 (Fragment).
 OS Homo sapiens (Human).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
 OX NCBI_TaxID=9606;
 RN [1]
 RP MEDLINE=93289963; PubMed=8512072; DOI=10.1006/abio.1993.1209;
 RA Mullner S., Karbe-Thonges B., Tripler D.;
 RT "Charge heterogeneity of insulin fusion proteins expressed in Escherichia coli is not due to proteolytic degradation.";
 RL Anal. Biochem. 210:366-373(1993).
 SQ SEQUENCE 23 AA; 2637 MW; 40B64C6875CE021F CRC64;

Query Match 61.9%; Score 91; DB 2; Length 23;

Best Local Similarity 90.5%; Pred. No. 1.9e-06;
 Matches 19; Conservative 0; Mismatches 2; Indels 0; Gaps 0;

QY 3 TSSSTKTKTQLQLEHLLDLQML 23
 Db 3 TSXSTKTKTQLQLEHLLDLQML 23

RESULT 38
 IL2_ORCOR STANDARD; PRT; 152 AA.
 AC Q97513;
 DT 30-MAY-2000 (Rel. 39, Created)
 DT 30-MAY-2000 (Rel. 39, Last sequence update)
 DT 05-JUL-2004 (Rel. 44, Last annotation update)
 DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGFP (Fragment)).
 DE Name=IL2;
 OS Orcinus orca (Killer whale).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Cetacea; Odontoceti; Delphinidae;
 OC Orcinus.
 OX NCBI_TaxID=9733;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Ness T.L., Bradley W.G., Reynolds J.E. III, Roess W.B.;
 RT "Isolation and expression of the interleukin-2 gene from the killer whale, Orcinus orca.";
 RL Mar. Mamm. Sci. 14:531-543(1998).
 CC -!- FUNCTION: Produced by T-cells in response to antigenic or mitogenic stimulation, this protein is required for T-cell proliferation and other activities crucial to regulation of the immune response. Can stimulate B cells, monocytes, lymphokine-activated killer cells, natural killer cells, and glioma cells (By similarity).
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- SIMILARITY: Belongs to the IL-2 family.

This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL Outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See <http://www.isb-sib.ch/announce/> or send an email to license@isb-sib.ch).

EMBL; AF009570; AAD01426.1; -
 HSSP; P01585; 1M49.
 InterPro; IPR009079; 4_helix_cytokine.
 InterPro; IPR000779; Interleukin-2.
 Pfam; PF00715; IL2; 1.
 PRINTS; PR00265; INTERLEUKIN2.
 ProDom; PD003649; Interleukin-2; 1.
 SMART; SM00189; IL2; 1.
 PROSITE; PS00424; INTERLEUKIN_2; 1.
 Cytokine; Glycoprotein; Growth factor; Immune response; Signal; T-cell.

SIGNAL 1 20 By similarity.
 CHAIN 21 >152 Interleukin-2.
 FT CARBOHYD 23 23 O-linked (GalNAc...) (By similarity).
 FT DISULFID 78 126 By similarity.
 FT NON_TER 152 152
 SQ SEQUENCE 152 AA; 17424 MW; 308F91821ECCB764 CRC64;

Query Match 59.9%; Score 88; DB 1; Length 152;
 Best Local Similarity 60.0%; Pred. No. 4.5e-05;
 Matches 18; Conservative 6; Mismatches 6; Indels 0; Gaps 0;

QY 1 APTSSSTKTKTQLQLEHLLDLQMLNGINN 30
 Db 21 APTSSSTNTKKQVQLQDLQLLEKINN 50

RESULT 39

Q71V48
ID Q71V48 PRELIMINARY; PRT; 38 AA.
AC Q71V48;
DT 05-JUL-2004 (TREMELrel. 27, Created)
DT 05-JUL-2004 (TREMELrel. 27, Last sequence update)
DT 05-JUL-2004 (TREMELrel. 27, Last annotation update)
DE Interleukin-2 (Fragment).
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RA Turner D.M., Sinnott P.J., Hutchinson I.V.;
RL Submitted (OCT-1997) to the EMBL/GenBank/DBJ databases.
DR EMBL; AF031845; BAB86861.1; -
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR ProDom; PD003649; Interleukin-2; 1.
FT NON_TER 38 38
SQ SEQUENCE 38 AA; 4192 MW; 8DE4AE5344C2CBA3 CRC64;

Query Match 59.2%; Score 87; DB 2; Length 38;

Best Local Similarity 100.0%; Pred. No. 1.3e-05; Mismatches 0; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQLEHLL 18

DB 21 APTSSSTKKTQLEHLL 38

RESULT 40

Q9XT84
ID Q9XT84 PRELIMINARY; PRT; 154 AA.
AC Q9XT84;
DT 01-NOV-1999 (TREMELrel. 12, Created)
DT 01-NOV-1999 (TREMELrel. 12, Last sequence update)
DT 01-NAR-2004 (TREMELrel. 26, Last annotation update)
DE Interleukin 2.
OS Delphinapterus leucas (Beluga whale).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Cetacea; Odontoceti;
OC Monodontidae; Delphinapterus.
OX NCBI_TaxID=9749;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=99221046; PubMed=10206205; DOI=10.1016/S0165-2427(99)00009-4;
RA St-Laurent G., Beliveau C., Archambault D.;
RT "Molecular cloning and phylogenetic analysis of beluga whale
RT (Delphinapterus leucas) and grey seal (Halichoerus grypus) interleukin
RT 2.";
RL Vet. Immunol. Immunopathol. 67:385-394(1999).
DR EMBL; AF072870; AAD40847.1; -
DR HSSP; P60568; IIRL.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR000779; 4 helix cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00285; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN 2; 1.
SQ SEQUENCE 154 AA; 17652 MW; 4288D3D41D04F172 CRC64;

Query Match 56.5%; Score 83; DB 2; Length 154;

Best Local Similarity 56.7%; Pred. No. 0.00026; Mismatches 6; Indels 7; Gaps 0;

QY 1 APTSSSTKKTQLEHLLDLQMLNGINN 30
DB 21 APTSSSTNTYKKQVQSLLQDLHLKKEINN 50

Search completed: September 23, 2005, 12:48:04
Job time : 52.1475 secs

This Page Blank (uspro)

GenCore version 5.1.6
Copyright (c) 1993 - 2005 Compugen Ltd.

OM protein - protein search, using sw model

Run on: September 23, 2005, 12:40:19 ; Search time 23.6066 Seconds
(without alignments)
122.275 Million cell updates/sec

Title: US-10-727-514-4

Perfect score: 147

Sequence: 1 APTSSSTKTKQLQLEHLLDLQMLNGINN 30

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 283416 seqs, 96216763 residues

Total number of hits satisfying chosen parameters: 283416

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 100 summaries

Database :

PIR 79:*

1: pir1:*

2: pir2:*

3: pir3:*

4: pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	147	100.0	153	1	ICG12
2	147	100.0	153	1	ICRU2
3	114	77.6	154	2	JN0698
4	97	66.0	155	2	A31278
5	96	65.3	154	2	S16241
6	95	64.6	155	2	S33509
7	92	62.6	149	2	S31391
8	79	53.7	155	2	I45913
9	79	53.7	155	2	S38662
10	79	53.7	155	2	S11488
11	69	46.9	169	2	S37289
12	64	43.5	169	1	ICMS2
13	59.5	40.5	60	2	I68870
14	58.5	39.8	62	2	I54512
15	57.5	39.1	72	2	I68871
16	54	36.7	357	2	S12169
17	52	35.4	737	2	G82262
18	51	34.7	304	2	F95285
19	51	34.7	627	2	E70122
20	50	34.0	365	2	C70701
21	49	33.3	543	2	F82217
22	49	33.3	1130	2	A89130
23	48.5	33.0	240	2	T22210
24	48	32.7	155	1	F64145
25	48	32.7	189	2	H64307
26	48	32.7	441	2	AB1367
27	48	32.7	441	2	AC1736
28	48	32.7	1061	1	GNLJG4
29	47.5	32.3	244	2	T11685

30	47.5	32.3	938	2	F86548
31	47.5	32.3	938	2	H2074
32	47	32.0	230	2	H82447
33	47	32.0	398	2	B70209
34	47	32.0	557	2	F89839
35	47	32.0	1008	2	T41244
36	47	32.0	1964	2	A59282
37	46.5	31.6	159	2	T05656
38	46.5	31.6	211	2	C84888
39	46	31.3	293	2	A71946
40	46	31.3	323	2	H90434
41	46	31.3	380	1	C37760
42	46	31.3	516	2	B64551
43	46	31.3	571	2	H82355
44	46	31.3	614	2	T18745
45	46	31.3	692	2	T32980
46	46	31.3	1612	2	JC5210
47	46	31.3	3724	2	T18427
48	45.5	31.0	466	2	E90228
49	45	30.6	307	2	T46103
50	45	30.6	328	2	AC2415
51	45	30.6	333	2	S32114
52	45	30.6	343	2	C89779
53	45	30.6	530	2	C82442
54	45	30.6	870	1	GNMVJA
55	45	30.6	895	2	F75608
56	45	30.6	903	2	JR0327
57	45	30.6	903	2	T50334
58	45	30.6	1802	2	G71616
59	44.5	30.3	359	2	T22950
60	44.5	30.3	511	2	S44275
61	44.5	30.3	741	2	A45771
62	44	29.9	269	2	G91169
63	44	29.9	273	2	G86015
64	44	29.9	283	2	B97167
65	44	29.9	324	2	A97036
66	44	29.9	347	2	A12010
67	44	29.9	357	2	S23526
68	44	29.9	357	2	S23525
69	44	29.9	368	2	T46607
70	44	29.9	474	2	B69494
71	44	29.9	474	2	A11146
72	44	29.9	581	2	S09140
73	44	29.9	585	2	T19814
74	44	29.9	594	2	JG6309
75	44	29.9	595	2	AC8012
76	44	29.9	627	2	S46820
77	44	29.9	628	2	B91146
78	44	29.9	628	2	F85991
79	44	29.9	715	2	G86634
80	44	29.9	752	2	D40899
81	44	29.9	943	2	S44636
82	44	29.9	1019	2	T11560
83	44	29.9	1034	2	D65119
84	44	29.9	1050	2	AE0380
85	44	29.9	1182	2	T30189
86	44	29.9	1187	2	T46637
87	44	29.9	1188	2	T46608
88	44	29.9	1245	2	E83110
89	43.5	29.6	115	2	D97846
90	43.5	29.6	289	1	S56226
91	43.5	29.6	337	1	A37760
92	43	29.3	145	2	H83921
93	43	29.3	152	2	T04479
94	43	29.3	184	2	D71933
95	43	29.3	202	2	S75332
96	43	29.3	209	2	H69901
97	43	29.3	210	2	B85594
98	43	29.3	210	2	F64821
99	43	29.3	210	2	F90743
100	43	29.3	253	2	T15385

polymorphic outer
polymorphic membra
DNA-binding respon
conserved hypother
hypothetical prote
SEC14 protein homo
nonmuscle myosin I
hypothetical prote
hypothetical prote
hypothetical prote
galactokinase (EC
oligopeptidase ABC t
peptide ABC transp
hypothetical prote
hypothetical prote
DNA (cytosine-5)-
hypothetical prote
amino acid specif
hypothetical prote
85C protein - Myco
hypothetical prote
probable peptide A
pol polyprotein -
dynam-in-related pr
conserved hypother
dynam-in-related pr
hypothetical prote
hypothetical prote
dopamine receptor
2-5A-dependent RNA
probable acyltrans
hypothetical prote
flagellin family P
probable membrane
two-component hybr
cinnamyl-alcohol d
cinnamyl-alcohol d
3-isopropylmalate
phenylalanyl-tRNA
hypothetical cell
coli intron protei
hypothetical prote
F20D23.3 protein -
G protein-coupled
hypothetical prote
probable integral
probable integral
hypothetical prote
pol polyprotein -
f22b7.5 protein -
pol polyprotein -
acriflavin resista
multidrug efflux p
myelin transcripti
transcription fact
zinc finger protei
exodeoxyribonuclea
hypothetical prote
hypothetical prote
UDPGlucose 4-epime
transcription regu
cinnamyl-alcohol d
hypothetical prote
fibrillin - Synech
general stress pro
probable transfera
probable glucathio
probable transfera
hypothetical prote

ALIGNMENTS

RESULT 1

ICG12

interleukin-2 precursor - common gibbon
 N/Alternate names: IL-2; T-cell growth factor
 C/Species: Hylobates lar (common gibbon, white-handed gibbon)
 C/Date: 31-Dec-1991 #sequence_revision 31-Dec-1991 #text_change 09-Jul-2004
 C/Accession: A94067; A01849
 R/Chen, S.J.; Holbrook, N.J.; Mitchell, K.F.; Vallone, C.A.; Greengard, J.S.; Crabtree, Proc. Natl. Acad. Sci. U.S.A. 82, 7284-7288, 1985
 A/Title: A viral long terminal repeat in the interleukin 2 gene of a cell line that contains a provirus
 A/Reference number: A94067; MUID:86042650; PMID:3877307
 A/Accession: A94067
 A/Molecule type: mRNA
 A/Residues: 1-153 <CHE>
 A/Cross-references: UNIPROT:P60569; GB:M11144; NID:G177014; PIDN:AAA35454.1; PID:G177015
 A/Experimental source: leukemia cell line MLA 144; ATCC TIB 201
 A/Note: the integration of a retrovirus sequence containing a 5' LTR into the 3' noncoding region of the interleukin-2 gene
 C/Suprafamily: interleukin-2
 C/Keywords: cytokine; glycoprotein; growth factor; immunoregulation; lymphokine; T-cell receptor; signal sequence #status predicted <SIG>
 F/1-20/Domain: signal sequence #status predicted <SIG>
 F/21-153/Product: interleukin-2 #status predicted <IL2>
 F/23/Binding site: carboxylate (Thr) (covalent) #status predicted
 F/78-125/Disulfide bonds: #status predicted

Query Match 100.0%; Score 147; DB 1; Length 153;
 Best Local Similarity 100.0%; Pred. NO. 2.3e-14;
 Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 APTSSSTKTKTQLQLEHLDDQLMILNGINN 30
 DB 21 APTSSSTKTKTQLQLEHLDDQLMILNGINN 50

RESULT 2

ICU2

interleukin-2 precursor [validated] - human
 N/Alternate names: IL-2; T-cell growth factor
 C/Species: Homo sapiens (man)
 C/Date: 11-Aug-1983 #sequence_revision 11-Aug-1983 #text_change 09-Jul-2004
 R/Holbrook, N.J.; Lieber, M.; Crabtree, G.R. Proc. Natl. Acad. Sci. U.S.A. 80, 7437-7441, 1983
 A/Title: Structure of the human interleukin 2 gene.
 A/Reference number: A21192; MUID:84170243; PMID:6324170
 A/Accession: A21192
 A/Molecule type: DNA
 A/Residues: 1-153 <HOL>
 A/Cross-references: UNIPROT:P60568; GB:X00695; GB:X00200; GB:X00201; GB:X00202; NID:G33781
 R/Fujita, T.; Takaoka, C.; Matsui, H.; Taniguchi, T. Proc. Natl. Acad. Sci. U.S.A. 80, 7437-7441, 1983
 A/Title: Structure of the human interleukin 2 gene.
 A/Reference number: A21192; MUID:84170243; PMID:6324170
 A/Accession: A21192
 A/Molecule type: DNA
 A/Residues: 1-153 <FUG>
 A/Cross-references: GB:J00264; NID:G186294; PIDN:AAD48509.1; PID:G5729676
 R/Holbrook, N.J.; Smith, K.A.; Fornace Jr., A.J.; Comeau, C.M.; Wiskocil, R.L.; Crabtree, Proc. Natl. Acad. Sci. U.S.A. 81, 1634-1638, 1984
 A/Title: T-cell growth factor: complete nucleotide sequence and organization of the gene
 A/Reference number: A20961; MUID:84170356; PMID:6608729
 A/Accession: A20961
 A/Molecule type: DNA
 A/Residues: 1-153 <HO2>
 A/Cross-references: GB:K02056; NID:G186302; PIDN:AAA98792.1; PID:G386819
 R/Laabi, Y.; Gras, M.P.; Carbonnel, F.; Brouet, J.C.; Berger, R.; Larsen, C.J.; Tsapis, EMBO J. 11, 3897-3904, 1992
 A/Title: A new gene, BCM, on chromosome 16 is fused to the interleukin 2 gene by a t(4;12)(p11;p11) translocation
 A/Reference number: S31208; MUID:93010984; PMID:1396583
 A/Accession: S31209
 A/Molecule type: mRNA
 A/Note: mutation of Phe-42 to Ala reduced binding to the IL-2 receptor 5-10 fold without

A/Residues: 11-117 <LAA>
 A/Cross-references: EMBL:Z14955
 A/Note: this sequence is shown from the beginning of the fragment to the chromosomal break
 R/Taniguchi, T.; Matsui, H.; Fujita, T.; Takaoka, C.; Kashima, N.; Yoshimoto, R.; Hamuro Nature 302, 305-310, 1983
 A/Title: Structure and expression of a cloned cDNA for human interleukin-2.
 A/Reference number: A93297; MUID:83167472; PMID:6403867
 A/Accession: A93297
 A/Molecule type: mRNA
 A/Residues: 1-153 <TAN>
 A/Cross-references: GB:V00564; NID:G33780; PIDN:CAA23827.1; PID:G33781
 A/Experimental source: leukemic T-cell line Jurkat-111, cloned from Jurkat-FHCRCL
 R/Maeda, S.; Nishino, N.; Obaru, K.; Mita, S.; Nomiya, H.; Shimada, K.; Fujimoto, K.; Biochem. Biophys. Res. Commun. 115, 1040-1047, 1983
 A/Title: Cloning of interleukin 2 mRNAs from human tonsils.
 A/Reference number: A90113; MUID:84023840; PMID:6312994
 A/Accession: A90113
 A/Molecule type: mRNA
 A/Residues: 1-153 <MAE>
 A/Cross-references: GB:J00264; NID:G186294; PIDN:AAD48509.1; PID:G5729676
 A/Experimental source: tonsillar mononuclear cells
 R/Devos, R.; Plaetinck, G.; Cheroutre, H.; Simons, G.; Degraeve, W.; Tavernier, J.; Renau Nucleic Acids Res. 11, 4307-4323, 1983
 A/Title: Molecular cloning of human interleukin 2 cDNA and its expression in Escherichia coli
 A/Reference number: A93478; MUID:83246551; PMID:6306584
 A/Accession: A93478
 A/Molecule type: mRNA
 A/Residues: 1-153 <DEV>
 A/Cross-references: GB:V00564; NID:G33780; PIDN:CAA23827.1; PID:G33781
 A/Experimental source: splenocytes
 R/Eisenberg, O.; Faber-Eman, A.; Lotan, M.; Schwartz, M. J. Neurochem. 64, 1928-1936, 1995
 A/Title: Interleukin-2 transcripts in human and rodent brains: possible expression by as
 A/Reference number: I56518; MUID:95239150; PMID:7722480
 A/Accession: I56518
 A/Status: translated from GB/EMBL/DBJ
 A/Molecule type: mRNA
 A/Residues: 1-152 <EIZ>
 A/Cross-references: GB:S77834; NID:G999000
 A/Accession: I73624
 A/Status: preliminary; translated from GB/EMBL/DBJ
 A/Molecule type: mRNA
 A/Residues: 5-7, 'P', 9-17, 'P', 19-32, 'X', 34-45, 'X', 47-143 <RES>
 A/Cross-references: GB:S77835; NID:G999001; PIDN:AAD14264.1; PID:G4261964
 R/Nishino, N.; Obaru, K.; Maeda, S.; Shimada, K.; Onoue, K. Biomed. Res. 6, 197-205, 1985
 A/Title: Organization of the DNA regions flanking the human interleukin 2 gene.
 A/Reference number: I52528
 A/Accession: I52528
 A/Status: translated from GB/EMBL/DBJ
 A/Molecule type: DNA
 A/Residues: 1-68 <RE2>
 A/Cross-references: GB:M33199; NID:G186296; PIDN:AAA59139.1; PID:G553508
 R/Siebnlist, U.; Durand, D.B.; Bressler, P.; Holbrook, N.J.; Norris, C.A.; Kamoun, M.; Mol. Cell. Biol. 6, 3042-3049, 1986
 A/Title: Promoter region of interleukin-2 gene undergoes chromatin structure changes and
 A/Reference number: I57603; MUID:87064618; PMID:3491296
 A/Accession: I57603
 A/Status: translated from GB/EMBL/DBJ
 A/Molecule type: DNA
 A/Residues: 1-68 <RE3>
 A/Cross-references: GB:M13879; NID:G186305; PIDN:AAA59141.1; PID:G553509
 R/Jewell, M.P.; Chaplin, M.A.; Wallace, D.M.; Dykes, C.W.; Hobden, A.N. Biochemistry 27, 6883-6892, 1988
 A/Title: Structure-activity relationships of recombinant human interleukin 2.
 A/Reference number: I52401; MUID:89062420; PMID:3264184
 A/Contents: recombinant IL-2 and mutants expressed in E. coli
 A/Accession: I52401
 A/Status: translated from GB/EMBL/DBJ
 A/Molecule type: DNA
 A/Residues: 'M', 21-153 <REA>
 A/Cross-references: GB:M22005; NID:G186300; PIDN:AAA59140.1; PID:G386818
 A/Note: mutation of Phe-42 to Ala reduced binding to the IL-2 receptor 5-10 fold without

R;Robb, R.J.; Kutny, R.M.; Panico, M.; Morris, H.R.; Chowdhry, V.
Proc. Natl. Acad. Sci. U.S.A. 81, 6486-6490, 1984
A>Title: Amino acid sequence and post-translational modification of human interleukin 2.
A;Reference number: A94009; MUID:85038540; PMID:6333684
A;Accession: A94009
A;Molecule type: protein
A;Residues: 21-153 <ROB>
A;Note: disulfide bonds and carbohydrate binding site were determined
n in lacking 21-Ala (FT-IL2-A and FT-IL2-B) and 22-Pro (FT-IL2-B)
R;Conradt, H.S.; Nimtz, M.; Dittmar, K.E.J.; Lindenmaier, W.; Hoppe, J.; Hauser, H.
J. Biol. Chem. 264, 17368-17373, 1989
A>Title: Expression of human interleukin-2 in recombinant baby hamster kidney, Ltk-, and
de.
A;Reference number: A34463; MUID:90008901; PMID:2793860
A;Accession: A34463
A;Molecule type: protein
A;Residues: 21-35 <CON>
A;Note: the O-linked glycosylation site in recombinant material matched that from human
R;Grabenhorst, E.; Hofer, B.; Nimtz, M.; Jaeger, V.; Conradt, H.S.
Eur. J. Biochem. 215, 189-197, 1993
A>Title: Biosynthesis and secretion of human interleukin 2 glycoproteins variants from B
A;Reference number: S34052; MUID:93345493; PMID:8344280
A;Contents: annotation; glycosylation of variant forms expressed in insect cells
C;Genetics:
A;Gene: GDB:IL2
A;Cross-references: GDB:119344; OMIM:147680
A;Map position: 4q26-q27
A;Introns: 49/3; 63/3; 117/3
C;Superfamily: interleukin-2
C;Keywords: cytokine; glycoprotein; growth factor; immunoregulation; lymphokine; T-cell
F;1-20/Domain: signal sequence #status predicted <SIG>
F;21-153/Product: interleukin-2 #status experimental <IL2>
F;23/Binding site: carbohydrate (Thr) (covalent) #status experimental
F;78-125/Disulfide bonds: #status experimental

Query Match 100.0%; Score 147; DB 1; Length 153;
Best Local Similarity 100.0%; Pred. No. 2.3e-14;
Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQQLLEHLLDLQMLINGINN 30
DB 21 APTSSSTKKTQQLLEHLLDLQMLINGINN 50

RESULT 3
JN0698
interleukin 2 precursor - cat
C;Species: Felis silvestris catus (domestic cat)
C;Date: 03-Feb-1994 #sequence_revision 03-Feb-1994 #text_change 09-Jul-2004
C;Accession: JN0698
R;Cozzi, P.J.; Padrid, P.A.; Takeda, J.; Alegria, M.L.; Yuhki, N.; Leff, A.R.
Biochem. Biophys. Res. Commun. 194, 1038-1043, 1993
A>Title: Sequence and functional characterization of feline interleukin 2.
A;Reference number: JN0698; MUID:93356765; PMID:8352761
A;Accession: JN0698
A;Status: nucleic acid sequence not shown
A;Molecule type: mRNA
A;Residues: 1-154 <COZ>
A;Cross-references: UNIPROT:Q07885; GB:L19402; NID:G304313; PIDN:AAA02865.1; PID:G304314
C;Superfamily: interleukin-2
C;Keywords: growth factor

Query Match 77.6%; Score 114; DB 2; Length 154;
Best Local Similarity 73.3%; Pred. No. 1.8e-09;
Matches 22; Conservative 5; Mismatches 3; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQQLLEHLLDLQMLINGINN 30
DB 21 APASSTKETQQLLEHLLDLQMLINGINN 50

A31278
interleukin-2 precursor - rat
N;Alternate names: IL-2; T-cell growth factor
C;Species: Rattus norvegicus (Norway rat)
C;Date: 26-Apr-1989 #sequence_revision 26-Apr-1989 #text_change 09-Jul-2004
C;Accession: A45882; A31278
R;McKnight, A.J.; Mason, D.W.; Barclay, A.N.
Immunogenetics 30, 145-147, 1989
A>Title: Sequence of rat interleukin 2 and anomalous binding of a mouse interleukin 2 c
A;Reference number: A45882; MUID:89339608; PMID:2788130
A;Accession: A45882
A;Status: preliminary
A;Molecule type: mRNA
A;Residues: 1-155 <MCX>
A;Cross-references: UNIPROT:P17108; GB:M22899; NID:G204909; PIDN:AAA41427.1; PID:G204910
C;Superfamily: interleukin-2
C;Keywords: cytokine; glycoprotein; growth factor; immunoregulation; T-cell

Query Match 66.0%; Score 97; DB 2; Length 155;
Best Local Similarity 66.7%; Pred. No. 6e-07;
Matches 20; Conservative 4; Mismatches 6; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQQLLEHLLDLQMLINGINN 30
DB 21 APTSSPAKETQQLLEHLLDLQMLINGINN 50

RESULT 5
S16241
interleukin-2 precursor - pig
N;Alternate names: IL-2; T-cell growth factor
C;Species: Sus scrofa domestica (domestic pig)
C;Date: 30-Jun-1992 #sequence_revision 30-Jun-1992 #text_change 09-Jul-2004
C;Accession: S16241; S15473
R;Goodall, J.C.; Emery, D.C.; Bailey, M.; English, L.S.; Hall, L.
Biochim. Biophys. Acta 1089, 257-258, 1991
A>Title: cDNA cloning of porcine interleukin 2 by polymerase chain reaction.
A;Reference number: S16241; MUID:91274360; PMID:2054386
A;Accession: S16241
A;Molecule type: mRNA
A;Residues: 1-154 <GOO>
A;Cross-references: UNIPROT:P26891; EMBL:X56750; NID:G1991; PIDN:CAA40071.1; PID:G1992
R;Lefevre, F.
submitted to the EMBL Data Library, March 1991
A;Description: Molecular cloning of porcine interleukin 2 cDNA by the polymerase chain
A;Reference number: S15473
A;Accession: S15473
A;Molecule type: mRNA
A;Residues: 1-154 <LEP>
A;Cross-references: EMBL:X58428; NID:G2068; PIDN:CAA41330.1; PID:G2069
C;Superfamily: interleukin-2
C;Keywords: cytokine; glycoprotein; growth factor; immunoregulation; T-cell
F;1-20/Domain: signal sequence #status predicted <SIG>
F;21-154/Product: interleukin-2 #status predicted <MAT>

Query Match 65.3%; Score 96; DB 2; Length 154;
Best Local Similarity 66.7%; Pred. No. 8.4e-07;
Matches 20; Conservative 4; Mismatches 6; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQQLLEHLLDLQMLINGINN 30
DB 21 APTSSSTKKTQQLLEHLLDLQMLINGINN 50

RESULT 6
S33509
interleukin-2 - Mongolian jird
C;Species: Meriones unguiculatus (Mongolian jird)
C;Date: 06-Jan-1995 #sequence_revision 06-Jan-1995 #text_change 09-Jul-2004
C;Accession: S33509
R;Mai, Z.; Klei, T.; Horchov, D.
submitted to the EMBL Data Library, October 1992
A;Description: Cross-species PCR cloning of Jird (Meriones unguiculatus) interleukin-2 c

A;Reference number: S33509
A;Accession: S33509
A;Status: preliminary
A;Molecule type: mRNA
A;Residues: 1-155 <MAI>
A;Cross-references: UNIPROT:Q08081; EMBL:X68779; NID:g577588; PIDN:CAA48679.1; PID:g3116
C;Superfamily: interleukin-2

Query Match 64.6%; Score 95; DB 2; Length 155;
Best Local Similarity 66.7%; Pred. No. 1.2e-06;
Matches 20; Conservative 2; Mismatches 8; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQQLQLEHLLDLQMLINGINN 30
||||| |::| |||||::| |
DB 21 APTSPFAKAAQQLQLEHLLDLQMLINGINN 50
||||| |::| |||||::| |

RESULT 7
S31391
interleukin-2 precursor - horse
C;Species: Equus caballus (domestic horse)
C;Date: 13-Jan-1995 #sequence_revision 13-Jan-1995 #text_change 09-Jul-2004
C;Accession: S31391
R;Tavernor, A.S.; Butcher, G.W.
submitted to the EMBL Data Library, November 1992
A;Description: cDNA cloning of equine interleukin-2 by polymerase chain reaction.
A;Reference number: S31391
A;Accession: S31391
A;Status: preliminary
A;Molecule type: mRNA
A;Residues: 1-149 <TAV>
A;Cross-references: UNIPROT:P37997; EMBL:X69393; NID:g1076; PIDN:CAA49190.1; PID:g1077
C;Superfamily: interleukin-2

Query Match 62.6%; Score 92; DB 2; Length 149;
Best Local Similarity 56.7%; Pred. No. 3.2e-06;
Matches 17; Conservative 8; Mismatches 5; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQQLQLEHLLDLQMLINGINN 30
||||| |::| |||||::| |
DB 21 APTSSSKRETQQLQLEHLLDLQMLINGINN 50
||||| |::| |||||::| |

RESULT 8
I45913
interleukin-2 precursor - bovine
C;Species: Bos primigenius taurus (cattle)
C;Date: 16-Aug-1996 #sequence_revision 16-Aug-1996 #text_change 09-Jul-2004
C;Accession: I45913; S21470; S20761
R;Cerretti, D.P.; McKereghan, K.; Larsen, A.; Cantrell, M.A.; Anderson, D.; Gillis, S.;
Proc. Natl. Acad. Sci. U.S.A. 83, 3223-3227, 1986
A;Title: Cloning, sequence, and expression of bovine interleukin 2.
A;Reference number: I45913; MUID:86205869; PMID:3517854
A;Accession: I45913
A;Status: preliminary; translated from GB/EMBL/DBJ
A;Molecule type: mRNA
A;Residues: 1-155 <CER>
A;Cross-references: UNIPROT:P05016; GB:M12791; NID:g163204; PIDN:AAA30586.1; PID:g163205
R;Anikeeva, N.N.; Vinogradova, T.V.; Votozhin, O.N.
submitted to the EMBL Data Library, December 1989
A;Reference number: S21470
A;Accession: S21470
A;Molecule type: DNA
A;Residues: 1-22 <AN2>
A;Cross-references: EMBL:X17201; NID:g452; PIDN:CAA35062.1; PID:g453
C;Genetics:
A;Gene: IL-2
C;Superfamily: interleukin-2
C;Keywords: cytokine; glycoprotein; growth factor; immunoregulation; lymphokine; T-cell

Query Match 53.7%; Score 79; DB 2; Length 155;
Best Local Similarity 53.3%; Pred. No. 0.00028;
Matches 16; Conservative 6; Mismatches 8; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQQLQLEHLLDLQMLINGINN 30
||||| |::| |||||::| |
DB 21 APTSSSTGNTMKVKSLLLDLQLLEKVK 50
||||| |::| |||||::| |

RESULT 9
S38662
interleukin-2 - goat
C;Species: Capra aegagrus hircus (domestic goat)
C;Date: 06-Jan-1995 #sequence_revision 06-Jan-1995 #text_change 09-Jul-2004
C;Accession: S38662
R;Rimstad, E.
submitted to the EMBL Data Library, November 1993
A;Description: The molecular cloning and expression of caprine interleukin 2.
A;Reference number: S38662
A;Accession: S38662
A;Status: preliminary
A;Molecule type: mRNA
A;Residues: 1-155 <RIM>
A;Cross-references: UNIPROT:P36835; EMBL:X76063; NID:g416002; PIDN:CAA53664.1; PID:g4160
C;Superfamily: interleukin-2

Query Match 53.7%; Score 79; DB 2; Length 155;
Best Local Similarity 53.3%; Pred. No. 0.00028;
Matches 16; Conservative 6; Mismatches 8; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQQLQLEHLLDLQMLINGINN 30
||||| |::| |||||::| |
DB 21 APTSSSTGNTMKVKSLLLDLQLLEKVK 50
||||| |::| |||||::| |

RESULT 10
S11488
interleukin-2 precursor - sheep
C;Species: Ovis orientalis aries, Ovis ammon aries (domestic sheep)
C;Date: 21-Nov-1993 #sequence_revision 10-Nov-1995 #text_change 09-Jul-2004
C;Accession: S11488; S13102; S15517
R;Goodall, J.C.; Emery, D.C.; Perry, A.C.F.; English, L.S.; Hall, L.
Nucleic Acids Res. 18, 5883, 1990
A;Title: cDNA cloning of ovine interleukin 2 by PCR.
A;Reference number: S11488; MUID:91016933; PMID:2216781
A;Accession: S11488
A;Status: preliminary
A;Molecule type: mRNA
A;Residues: 1-155 <GOO>
A;Cross-references: UNIPROT:P19114; EMBL:X53934; NID:g1281; PIDN:CAA37881.1; PID:g1282
R;Seow, H.F.; Rothel, J.S.; Radford, A.J.; Wood, P.R.
Nucleic Acids Res. 18, 7175, 1990
A;Title: The molecular cloning of ovine interleukin 2 gene by the polymerase chain react
A;Reference number: S13102; MUID:91088336; PMID:2263496
A;Accession: S13102
A;Status: preliminary
A;Molecule type: mRNA
A;Residues: 1-5, 'L', 7-155 <SEO>
A;Cross-references: EMBL:X55641; NID:g1810; PIDN:CAA39165.1; PID:g1811
R;Bujdosó, R.; Williamson, M.L.; Sargan, D.R.; Hein, W.H.; McConnell, I.
submitted to the EMBL Data Library, April 1991
A;Reference number: S15517
A;Accession: S15517
A;Status: preliminary
A;Molecule type: mRNA
A;Residues: 21-153 <BUJ>
A;Cross-references: EMBL:X60148
C;Superfamily: interleukin-2

Query Match 53.7%; Score 79; DB 2; Length 155;
Best Local Similarity 53.3%; Pred. No. 0.00028;
Matches 16; Conservative 6; Mismatches 8; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQQLQLEHLLDLQMLINGINN 30
||||| |::| |||||::| |
DB 21 APTSSSTGNTMKVKSLLLDLQLLEKVK 50
||||| |::| |||||::| |

A;Contents: annotation
C;Genetics:
A;Gene: SMA0353
A;Genome: plasmid

Query Match 34.7%; Score 51; DB 2; Length 304;
Best Local Similarity 48.1%; Pred. No. 8.4;
Matches 13; Conservative 5; Mismatches 7; Indels 2; Gaps 1;

QY 6 STKKTKTQLEHLLDLQMLNGIN 30
||||| : : : : :
Db 58 STKKPQLTQLEGRVLAARSVNGIDN 84

RESULT 19

E70122
flagellar hook-associated protein (flgK) homolog - Lyme disease spirochete
C;Species: Borrelia burgdorferi (lyme disease spirochete)
C;Date: 13-Feb-1998 #sequence_revision 13-Feb-1998 #text_change 09-Jul-2004
C;Accession: E70122
R;Fraser, C.M.; Casjens, S.; Huang, W.M.; Sutton, G.G.; Clayton, R.; Lathigra, R.; White
son, D.; Peterson, J.; Kerlavage, A.R.; Quackenbush, J.; Salzberg, S.; Hanson, M.; Vugt,
; Bowman, C.; Garland, S.; Fujii, C.; Cotton, M.D.; Horst, K.; Roberts, K.; Hatch, B.
Nature 390, 580-586, 1997
A;Authors: Smith, H.O.; Venter, J.C.
A;Title: Genomic sequence of a Lyme disease spirochaete, Borrelia burgdorferi.
A;Reference number: A70100; MUID:98065943; PMID:9403685
A;Accession: E70122
A;Status: preliminary; nucleic acid sequence not shown; translation not shown
A;Molecule type: DNA
A;Residues: 1-627 <KLE>
A;Cross-references: UNIPROT:P70859; GB:AE001129; GB:AE000783; NID:g2688071; PIDN:AAC6657
A;Experimental source: strain B31

Query Match 34.7%; Score 51; DB 2; Length 627;
Best Local Similarity 42.3%; Pred. No. 19;
Matches 11; Conservative 7; Mismatches 8; Indels 0; Gaps 0;

QY 4 SSSTKKTQLEHLLDLQMLNGIN 29
| : : : : :
Db 564 SEITKESQSKLDLTDRMSISGVN 589

RESULT 20

C70701
hypothetical protein Rv0029 - Mycobacterium tuberculosis (strain H37RV)
C;Species: Mycobacterium tuberculosis
C;Date: 17-Jul-1998 #sequence_revision 17-Jul-1998 #text_change 09-Jul-2004
C;Accession: C70701
R;Cole, S.T.; Brosch, R.; Parkhill, J.; Garnier, T.; Churcher, C.; Harris, D.; Gordon, S.
; Connor, R.; Davies, R.; Devlin, K.; Feltwell, T.; Gentles, S.; Hamlin, N.; Holroyd, S.
Rajandream, M.A.; Rogers, J.; Rutter, S.; Seeger, K.; Skelton, S.; Squares, S.
Nature 395, 537-544, 1998
A;Authors: Sgares, R.; Sulston, J.E.; Taylor, K.; Whitehead, S.; Barrell, B.G.
A;Title: Deciphering the biology of Mycobacterium tuberculosis from the complete genome
A;Reference number: A70500; MUID:98295987; PMID:9634230
A;Accession: C70701
A;Status: preliminary; nucleic acid sequence not shown; translation not shown
A;Molecule type: DNA
A;Residues: 1-365 <COL>
A;Cross-references: UNIPROT:P71599; GB:280233; GB:AL123456; NID:g3261645; PIDN:CAB02414.
A;Experimental source: strain H37RV
C;Genetics:
A;Gene: Rv0029

Query Match 34.0%; Score 50; DB 2; Length 365;
Best Local Similarity 40.0%; Pred. No. 15;
Matches 12; Conservative 4; Mismatches 14; Indels 0; Gaps 0;

QY 1 APTSSSTKKTQLEHLLDLQMLNGINN 30
| : : : : :
Db 43 AELSSNTAETATLAHLKADLRHIVGSAND 72

RESULT 21

F82217
methyl-accepting chemotaxis protein VC1298 [imported] - Vibrio cholerae (strain N16961
C;Species: Vibrio cholerae
C;Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change 09-Jul-2004
C;Accession: F82217
R;Heidelberg, J.F.; Eisele, J.A.; Nelson, W.C.; Clayton, R.A.; Gwinn, M.L.; Dodson, R.J.;
chardson, D.; Ermolaeva, M.D.; Vamathevan, J.; Bass, S.; Qin, H.; Dragoi, I.; Sellers, I.
l, R.R.; Mekalanos, J.J.; Venter, J.C.; Fraser, C.M.
Nature 406, 477-483, 2000
A;Title: DNA Sequence of both chromosomes of the cholera pathogen Vibrio cholerae.
A;Reference number: A82035; MUID:20406833; PMID:10952301
A;Accession: F82217
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-543 <HEI>
A;Cross-references: UNIPROT:Q9KSF8; GB:AE004209; GB:AE003852; NID:g9655779; PIDN:AAF944.
A;Experimental source: serogroup O1, strain N16961; biotype El Tor
C;Genetics:
A;Gene: VC1298
A;Map position: 1

Query Match 33.3%; Score 49; DB 2; Length 543;
Best Local Similarity 37.5%; Pred. No. 32;
Matches 9; Conservative 7; Mismatches 8; Indels 0; Gaps 0;

QY 3 TSSSTKKTQLEHLLDLQMLN 26
: : : : :
Db 506 SASSTRISIDLEHLSQQLSLN 529

RESULT 22

A89130
protein F52E1.4 [imported] - Caenorhabditis elegans
C;Species: Caenorhabditis elegans
C;Date: 10-May-2001 #sequence_revision 10-May-2001 #text_change 24-May-2001
C;Accession: A89130
R;anonymous, The C. elegans Sequencing Consortium.
Science 282, 2012-2018, 1998
A;Title: Genome sequence of the nematode C. elegans: a platform for investigating biolo
A;Reference number: A75000; MUID:9906613; PMID:9851916
A;Note: see websites genome.wustl.edu/gsc/C_elegans/ and www.sanger.ac.uk/Projects/C_el
A;Note: published errata appeared in Science 283, 35, 1999; Science 283, 2103, 1999; an
A;Accession: A89130
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-1130 <STO>
A;Cross-references: GB:chr_V; PIDN:AAB37038.1; PID:g1086805; GSPDB:GN00023; CESP:F52E1.4
C;Genetics:
A;Gene: F52E1.4
A;Map position: 5
C;Superfamily: membrane-bound guanylate cyclase; guanylate cyclase catalytic domain hom

Query Match 33.3%; Score 49; DB 2; Length 1130;
Best Local Similarity 46.2%; Pred. No. 72;
Matches 12; Conservative 6; Mismatches 8; Indels 0; Gaps 0;

QY 3 TSSSTKKTQLEHLLDLQMLNGI 28
: : : : :
Db 906 TTLASKCTPLQVNNLNDLYTFDGI 931

RESULT 23

T22210
hypothetical protein F44G4.7 - Caenorhabditis elegans
C;Species: Caenorhabditis elegans
C;Date: 15-Oct-1999 #sequence_revision 15-Oct-1999 #text_change 09-Jul-2004
C;Accession: T22210
R;Sims, M.
submitted to the EMBL Data Library, June 1995
A;Reference number: Z19530
A;Accession: T22210

C/Species: Chlamydomydia pneumoniae, Chlamydia pneumoniae
C/Date: 02-Mar-2001 #sequence_revision 02-Mar-2001 #text_change 09-Jul-2004
C/Accession: F86548
R/Shirai, M.; Hirakawa, H.; Kimoto, M.; Tabuchi, M.; Kishi, F.; Ouchi, K.; Shiba, T.; Ise, N.
Nucleic Acids Res. 28, 2311-2314, 2000
A/Title: Comparison of whole genome sequences of chlamydia pneumoniae J138.
A/Reference number: A86491; MUID:20330349; PMID:10871362
A/Accession: F86548
A/Status: preliminary
A/Molecule type: DNA
A/Residues: 1-938 <STO>
A/Cross-references: UNIPROT:Q9Z883; GB:BA000008; NID:g8978836; PIDN:BA098772.1; GSPDB:G1
A/Experimental source: strain J138
C/Genetics:
A/Gene: pmp_15

Query Match 32.3%; Score 47.5; DB 2; Length 938;
Best Local Similarity 42.9%; Pred. No. 98;
Matches 12; Conservative 4; Mismatches 9; Indels 3; Gaps 1;

Qy 2 P T S S T K T K T --- Q L Q L E H L L L D L Q M I L N 26
||| | | | : | | : | | | | |
Db 473 P T P S S T P T T V G S T I T L N H I A I D L P S I L S 500

RESULT 31
H72074
polymorphic membrane protein E/F family CP0286 [imported] - Chlamydomydia pneumoniae (st
C/Species: Chlamydomydia pneumoniae, Chlamydia pneumoniae
C/Date: 23-Apr-1999 #sequence_revision 23-Apr-1999 #text_change 09-Jul-2004
C/Accession: H72074; E81593
R/Kalman, S.; Mitchell, W.; Marathe, R.; Lammel, C.; Pan, J.; Olinger, L.; Grimwood, J.,
Nature Genet. 21, 385-389, 1999
A/Title: Comparative genomes of Chlamydia pneumoniae and C. trachomatis.
A/Reference number: A72000; MUID:99206606; PMID:10192388
A/Accession: H72074
A/Molecule type: DNA
A/Residues: 1-938 <ARN>
A/Cross-references: UNIPROT:Q9Z883; GB:AE001631; GB:AE001363; NID:g4376750; PIDN:AA01860
A/Experimental source: strain CWL029
R/Read, T.D.; Brunham, R.C.; Shen, C.; Gill, S.R.; Heidelberg, J.F.; White, O.; Hickey,
C.; Dodson, R.; Gwinn, M.; Nelson, W.; DeBoy, R.; Kolonay, J.; McClarty, G.; Salzberg,
Nucleic Acids Res. 28, 1397-1406, 2000
A/Title: Genome sequences of Chlamydia trachomatis MoPn and Chlamydia pneumoniae AR39.
A/Reference number: A81500; MUID:20150255; PMID:10684935
A/Accession: E81593
A/Molecule type: DNA
A/Residues: 1-938 <REN>
A/Cross-references: GB:AB002190; GB:AE002161; NID:g7189209; PIDN:AAF38143.1; PID:g718921
A/Experimental source: strain AR39, HL cells
C/Genetics:
A/Gene: pmp_15; CP0286

Query Match 32.3%; Score 47.5; DB 2; Length 938;
Best Local Similarity 42.9%; Pred. No. 98;
Matches 12; Conservative 4; Mismatches 9; Indels 3; Gaps 1;

Qy 2 P T S S T K T K T --- Q L Q L E H L L L D L Q M I L N 26
||| | | | : | | : | | | | |
Db 473 P T P S S T P T T V G S T I T L N H I A I D L P S I L S 500

RESULT 32
H82447
DNA-binding response regulator VCA0532 [imported] - Vibrio cholerae (strain N16961 serog
C/Species: Vibrio cholerae
C/Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change 09-Jul-2004
C/Accession: H82447
R/Heidelberg, J.F.; Eisen, J.A.; Nelson, W.C.; Clayton, R.A.; Gwinn, M.L.; Dodson, R.J.,
chardson, D.; Ermolaeva, M.D.; Vamathevan, J.; Bae, S.; Qin, H.; Dragoi, I.; Sellers, P.
1, R.R.; Mekalanos, J.J.; Venter, J.C.; Fraser, C.M.
Nature 406, 477-483, 2000
A/Title: DNA Sequence of both chromosomes of the cholera pathogen Vibrio cholerae.

A;Experimental source: strain J99
C;Genetics:

This Page Blank (uspto)

GenCore version 5.1.6
Copyright (c) 1993 - 2005 CompuGen Ltd.

OM protein - protein search, using sw model

Run on: September 23, 2005, 12:39:59 ; Search time 52.8525 Seconds
(without alignments)
300.354 Million cell updates/sec

Title: US-10-727-514-2

Perfect score: 152

Sequence: 1 MAPTSSSTKTKQLQLEHLLLDLQMLINGNN 31

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 1612378 seqs, 512079187 residues

Total number of hits satisfying chosen parameters: 1612378

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 100 summaries

Database : UniProt_03.*

1: uniprot_spprot.*

2: uniprot_trembl.*

Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	147	96.7	150	2	Q9C001
2	147	96.7	153	1	I12_HUMAN
3	147	96.7	153	1	I12_HYLLA
4	147	96.7	153	2	Q6NZ93
5	147	96.7	154	1	I12_MACFA
6	147	96.7	154	1	I12_MACMU
7	147	96.7	154	1	I12_MACNE
8	147	96.7	154	1	I12_PAPAN
9	145	95.4	154	1	I12_SAISC
10	145	95.4	154	2	Q7JFM2
11	145	95.4	154	2	Q7JFM3
12	145	95.4	154	2	Q7JFM4
13	145	95.4	154	2	Q7JFM5
14	145	95.4	154	2	Q9XE38
15	143	94.1	133	2	Q6QWNO
16	143	94.1	133	2	Q7Z7M3
17	142	93.4	154	1	I12_CERTO
18	137	90.1	153	2	Q6NZ91
19	135.5	89.1	156	2	Q13169
20	134	88.2	139	2	Q16334
21	116	76.3	154	1	I12_MIRAN
22	114	75.0	154	1	I12_FELCA
23	108.5	71.4	155	2	Q9XT83
24	107.5	70.7	66	2	Q9BG74
25	107.5	70.7	155	1	I12_CANFA
26	107	70.4	79	2	Q9TV12
27	107	70.4	152	2	Q80XG3
28	107	70.4	153	1	I12_RABIT
29	106	69.7	133	2	Q9MZR9
30	106	69.7	155	2	Q923T2
31	103	67.8	138	2	O70329

32	97	63.8	155	1	I12_RAT
33	96	63.2	154	1	I12_PIG
34	95	62.5	155	1	I12_MERUN
35	93	61.2	154	2	Q865X2
36	92	60.5	149	1	I12_HORSE
37	91	59.9	23	2	Q9UCF5
38	88	57.9	152	1	I12_ORCOR
39	87	57.2	38	2	Q71V48
40	83	54.6	154	2	Q9XT84
41	82	53.9	152	2	O88210
42	79	52.0	69	2	Q9GJRA
43	79	52.0	136	2	Q6E220
44	79	52.0	145	2	Q8HZ67
45	79	52.0	155	1	I12_BOVIN
46	79	52.0	155	1	I12_BUBBU
47	79	52.0	155	1	I12_CAPHI
48	79	52.0	155	1	I12_SHEEP
49	79	52.0	155	2	Q8HYR7
50	79	52.0	155	2	Q9GL83
51	79	52.0	162	1	I12_CEREL
52	77	50.7	147	2	Q7YRQ2
53	69	45.4	39	2	Q9BG73
54	69	45.4	150	2	P70291
55	69	45.4	169	2	Q9C0U8
56	67	44.1	150	2	P70294
57	65.5	43.1	155	2	P70292
58	64.5	42.4	166	1	I12_MUSSH
59	64	42.1	63	2	Q8BHA4
60	64	42.1	155	2	Q85QE7
61	64	42.1	169	1	I12_MOUSE
62	62.5	41.1	159	2	P70293
63	54	35.5	304	2	Q841X8
64	54	35.5	357	1	AAAA_EMENI
65	52	34.2	101	2	Q6DUY6
66	52	34.2	116	2	Q29138
67	52	34.2	155	1	YHCH_HAEIN
68	52	34.2	285	2	Q83F57
69	52	34.2	300	2	Q8VW37
70	52	34.2	300	2	Q841J1
71	52	34.2	300	2	Q841J2
72	52	34.2	737	2	Q9KTG5
73	52	34.2	746	2	Q6FNH5
74	52	34.2	1530	2	Q81BS2
75	51.5	33.9	2673	2	Q7QPT6
76	51	33.6	95	2	Q8BN23
77	51	33.6	304	2	Q930K5
78	51	33.6	322	2	Q72UY1
79	51	33.6	322	2	Q8EZZ2
80	51	33.6	334	2	Q7NRQ8
81	51	33.6	457	2	Q9NIP5
82	51	33.6	517	2	Q8R6R8
83	51	33.6	627	1	FLGK_BORBU
84	51	33.6	627	2	Q86213
85	50	32.9	193	2	Q7XL20
86	50	32.9	365	2	P71599
87	50	32.9	365	2	Q7U227
88	50	32.9	651	2	Q80UN2
89	50	32.9	703	2	Q68WE5
90	50	32.9	749	2	Q7TQEI
91	50	32.9	767	2	Q6PKB8
92	50	32.9	769	2	Q6KAMI
93	50	32.9	788	1	PCAP_HUMAN
94	50	32.9	792	1	PCAP_MOUSE
95	50	32.9	1046	1	POL_SIVAG
96	50	32.9	1454	1	CSF2_HUMAN
97	50	32.9	1476	2	Q6FJ05
98	50	32.9	3175	1	RFOCA_EAV
99	49.5	32.6	715	2	Q8EJ30
100	49.5	32.6	1518	2	Q7RA10

ALIGNMENTS

P17108	rattus norv
P26891	sus scrofa
Q08081	meriones un
Q865X2	lama glama
P37997	equus cabal
Q9UCF5	homo sapien
Q71V48	homo sapien
Q9XT84	delphinape
O88210	cavia porce
Q9GJRA	ovis aries
Q6E220	capra hircu
Q8HZ67	bos indicu
P05016	bos taurus
Q95KP3	bubalus bub
P36835	capra hircu
P19114	ovis aries
Q8HYR7	bos taurus
P51747	cervus elap
Q9GL83	capra hircu
Q7YRQ2	bos mutus g
Q9BG73	canis famli
P70291	mus musculu
Q9C0U8	mus musculu
P70294	mus musculu
P70292	mus musculu
Q08867	mus sprètus
Q8BHA4	mus musculu
Q65QE7	mannheimia
P04351	mus musculu
P70293	mus musculu
Q841X8	campylobact
P21133	emeritella
Q64UY6	cryptospori
Q29138	trichochus
P44583	haemophilus
Q83F57	coxiella bu
Q8VW37	coxiella bu
Q841J1	coxiella bu
Q841J2	coxiella bu
Q9KTG5	vibrio chol
Q6FNH5	candida gia
Q81BS2	plasmodium
Q7QPT6	giardia lam
Q8BN23	mus musculu
Q930K5	rhizobium m
Q72UY1	leptospiira
Q8EZZ2	leptospiira
Q7NRQ8	chromobacte
Q9NIP5	strongyloce
Q8R6R8	thermoanaer
P70859	borrelia bu
Q68213	borrelia ga
Q7XL20	oryza sativ
P71599	mycobacteri
Q7U227	mycobacteri
Q80UN2	mus musculu
Q68WE5	ricketsia
Q7TQEI	mus musculu
Q6PKB8	homo sapien
Q6KAMI	mus musculu
Q96RN5	homo sapien
Q924H2	mus musculu
P27980	sinian immu
Q6244	h cofactor
Q6TJ05	candida gia
P19811	equine arte
Q8EJ30	shewanella
Q7RA10	plasmodium

```

RESULT 1
Q9C001 ID Q9C001 PRELIMINARY; PRT; 150 AA.
AC Q9C001;
DT 01-JUN-2001 (TrEMBLrel. 17, Created)
DT 01-JUN-2001 (TrEMBLrel. 17, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Interleukin-2 (Fragment).
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=20545237; PubMed=11093171;
RX DOI=10.1002/1521-4141(2000012)30:12<3516::AID-IMMU3516>3.0.CO;2-S;
RA Matesanz F., Delgado C., Fresno M., Alcina A.;
RT "Allelic selection of human IL-2 gene.";
RL Eur. J. Immunol. 30:3516-3521(2000).
DR EMBL; AF228636; AAG53575.1; -.
DR HSP; P60568; IIRL.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR009079; 4_helix_cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN_2; 1.
DR NON_TER 150 150
FT SEQUENCE 150 AA; 17312 MW; BF5860F8436ACE5 CRC64;
SQ
Query Match 96.7%; Score 147; DB 2; Length 150;
Best Local Similarity 100.0%; Pred. No. 8.5e-14;
Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 APTSSSTKTQLQLEHLLDLQMLINGINN 31
Db |||||
21 APTSSSTKTQLQLEHLLDLQMLINGINN 50

RESULT 2
IL2_HUMAN IL2_HUMAN STANDARD; PRT; 153 AA.
AC P60568; P01585;
DT 21-JUL-1986 (Rel. 01, Created)
DT 21-JUL-1986 (Rel. 01, Last sequence update)
DT 25-OCT-2004 (Rel. 45, Last annotation update)
DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF)
DE (Algesleukin).
GN Name=IL2;
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=84247353; PubMed=6330695;
RA Holbrook N.J., Lieber M., Crabtree G.R.;
RT "DNA sequence of the 5' flanking region of the human interleukin 2
gene: homologues with adult T-cell leukemia virus.";
RL Nucleic Acids Res. 12:5005-5013(1984).
RN [2]
RP SEQUENCE FROM N.A.
RX MEDLINE=83167472; PubMed=6403867;
RA Taniguchi T., Mateui H., Fujita T., Takaoka C., Kashima N.,
RA Yoshimoto R., Hamuro J.;
RT "Structure and expression of a cloned cDNA for human interleukin-2.";
RL Nature 302:305-310(1983).
RN [3]

```

```

RP SEQUENCE FROM N.A.
RX MEDLINE=84023840; PubMed=6312994;
RA Maeda S., Nishino N., Obaru K., Mita S., Nomiya H., Shimada K.,
RA Fujimoto K., Teranishi T., Hirano T., Onoue K.;
RT "Cloning of interleukin 2 mRNAs from human tonsils.";
RL Biochem. Biophys. Res. Commun. 115:1040-1047(1983).
RN [4]
RP SEQUENCE FROM N.A.
RX MEDLINE=83246551; PubMed=6306584;
RA Devos R., Plaetnick G., Cheroutre H., Simons G., Degraeve W.,
RA Tavernier J., Renaud E., Fiers W.;
RT "Molecular cloning of human interleukin 2 cDNA and its expression in
E. coli.";
RL Nucleic Acids Res. 11:4307-4323(1983).
RN [5]
RP SEQUENCE FROM N.A.
RX MEDLINE=84170356; PubMed=6608729;
RA Holbrook N.J., Smith K.A., Fornace A.J. Jr., Comeau C.M.,
RA Wiskocil R.L., Crabtree G.R.;
RT "T-cell growth factor: complete nucleotide sequence and organization
of the gene in normal and malignant cells.";
RL Proc. Natl. Acad. Sci. U.S.A. 81:1634-1638(1984).
RN [6]
RP SEQUENCE FROM N.A.
RX MEDLINE=84170243; PubMed=6324170;
RA Fujita T., Takaoka C., Matsui H., Taniguchi T.;
RT "Structure of the human interleukin 2 gene.";
RL Proc. Natl. Acad. Sci. U.S.A. 80:7437-7441(1983).
RN [7]
RP SEQUENCE FROM N.A.
RX MEDLINE=95239150; PubMed=7722480;
RA Eisenberg O., Faber-Elman A., Lotan M., Schwartz M.;
RT "Interleukin-2 transcripts in human and rodent brains: possible
expression by astrocytes.";
RL J. Neurochem. 64:1928-1936(1995).
RN [8]
RP SEQUENCE FROM N.A.
RX MEDLINE=96422299; PubMed=8824916;
DOI=10.1002/(SICI)1098-2795(199602)43:2<180::AID-MRD7>3.3.CO;2-D;
RA Chernicky C.L., Tan H., Burfeind P., Ilan J., Ilan J.;
RT "Sequence of interleukin-2 isolated from human placental poly A+ RNA:
possible role in maintenance of fetal allograft.";
RL Mol. Reprod. Dev. 43:180-186(1996).
RN [9]
RP SEQUENCE FROM N.A.
RX Rieder M.J., Carrington D.P., Chung M.-W., Lee K.L., Poel C.L., Yi Q.,
RA Nickerson D.A.;
RT "SeattleSNPs: NHLBI HL66692 program for genomic applications, UW-
PHRCRC, Seattle, WA (URL: http://pga.gs.washington.edu).";
RL Submitted (MAR-2001) to the EMBL/GenBank/DBJ databases.
RN [10]
RP SEQUENCE FROM N.A.
RX TISSUE=Blood;
MEDLINE=22388257; PubMed=12477932; DOI=10.1073/pnas.242603899;
RA Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
RA Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
RA Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Haieh F.,
RA Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA Stapleton M., Soares M.B., Bonaldo M.F., Casavant T.L., Scheetz T.E.,
RA Brownstein M.J., Ustin T.B., Toshiyuki S., Carninci P., Prange C.,
RA Rana S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
RA Bosak S.A., McSwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
RA Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA Villalon D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
RA Fahy J., Helton E., Kettman M., Madan A., Rodriguez S., Sanchez A.,
RA Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
RA Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA Rodriguez Y.S.C., Grimwood J., Schmutz J., Myers R.M.,
RA Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smalls D.B.,
RA Schnerch A., Schein J.E., Jones S.J.M., Marra M.A.;
RT "Generation and initial analysis of more than 15,000 full-length human

```

RT and mouse cDNA sequences.";
 RL Proc. Natl. Acad. Sci. U.S.A. 99:16899-16903(2002).
 RN [11]
 RP SEQUENCE OF 21-153 FROM N.A.
 RX MEDLINE=89062420; PubMed=3264184;
 RA Weir M.P., Chaplin M.A., Wallace D.M., Dykes C.W., Hobden A.N.;
 RT "Structure-activity relationships of recombinant human interleukin
 RL 2.";
 RN Biochemistry 27:6883-6892(1988).
 RN [12]
 RP SEQUENCE OF 1-69 FROM N.A.
 RX MEDLINE=87064618; PubMed=3491296;
 RA Siebenlist U., Durand D.B., Bressler P., Holbrook N.J., Norris C.A.,
 RA Kamoun M., Kant J.A., Crabtree G.R.;
 RT "Promoter region of interleukin-2 gene undergoes chromatin structure
 RL changes and confers inducibility on chloramphenicol acetyltransferase
 RN gene during activation of T cells.";
 RL Mol. Cell. Biol. 6:3042-3049(1986).
 RN [13]
 RP SEQUENCE OF 1-68 FROM N.A.
 RA Nishino N., Obaru K., Maeda S., Shimada K., Onoue K.;
 RT "Organization of the DNA regions flanking the human interleukin 2
 RL gene.";
 RL Biomed. Res. 6:197-205(1985).
 RN [14]
 RP SEQUENCE OF 21-153, DISULFIDE BOND, AND CARBOHYDRATE-LINKAGE SITE.
 RX MEDLINE=85038540; PubMed=6333684;
 RA Robb R.J., Kutny R.M., Panico M., Morris H.R., Chowdhry V.;
 RT "Amino acid sequence and post-translational modification of human
 RL interleukin 2.";
 RL Proc. Natl. Acad. Sci. U.S.A. 81:6486-6490(1984).
 RN [15]
 RP CARBOHYDRATE-LINKAGE SITE.
 RX MEDLINE=90008901; PubMed=2793860;
 RA Conradt H.S., Nimz M., Dittmar K.E.J., Lindenmaier W., Hoppe J.,
 RA Hauser H.;
 RT "Expression of human interleukin-2 in recombinant baby hamster kidney,
 RL tk-, and Chinese hamster ovary cells. Structure of O-linked
 RL carbohydrate chains and their location within the polypeptide.";
 RN J. Biol. Chem. 264:17368-17373(1989).
 RN [16]
 RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).
 RX MEDLINE=88070646; PubMed=3500515;
 RA Brandhuber B.J., Boone T., Kenney W.C., McKay D.B.;
 RT "Three-dimensional structure of interleukin-2.";
 RL Science 238:1707-1709(1987).
 RN [17]
 RP COMPARISON OF X-RAY STRUCTURES.
 RX MEDLINE=92335891; PubMed=1631562;
 RA Bazan J.F.;
 RT "Unravelling the structure of IL-2.";
 RL Science 257:410-412(1992).
 RN [18]
 RP RESPONSE TO ABOVE LETTER.
 RX McKay D.B.;
 RL Science 257:412-413(1992).
 RN [19]
 RP STRUCTURES BY NMR.
 RX MEDLINE=92379010; PubMed=1510960;
 RA Mott H.R., Driscoll P.C., Boyd J., Cooke R.M., Weir M.P.,
 RA Campbell I.D.;
 RT "Secondary structure of human interleukin 2 from 3D heteronuclear NMR
 RL experiments.";
 RL Biochemistry 31:7741-7744(1992).
 RN [20]
 RP 3D-STRUCTURE MODELING.
 RX MEDLINE=95111955; PubMed=7529123;
 RA Bamrough P., Hedgecock C.J., Richards W.G.;
 RT "The interleukin-2 and interleukin-4 receptors studied by molecular
 RL modelling.";
 RL Structure 2:839-851(1994).
 CC -!- FUNCTION: Produced by T-cells in response to antigenic or
 CC mitogenic stimulation, this protein is required for T-cell

proliferation and other activities crucial to regulation of the
 immune response. Can stimulate B cells, monocytes, lymphokine-
 activated killer cells, natural killer cells, and glioma cells.
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- DISEASE: Involved in a form of T-cell acute lymphoblastic leukemia
 CC (T-ALL) by a chromosomal translocation t(4;16)(q26;p13) which
 CC involves TNFRSF17 and IL2.
 CC -!- PHARMACEUTICAL: Available under the name Proleukin (Chiron). Used
 CC in patients with renal cell carcinoma or metastatic melanoma.
 CC -!- SIMILARITY: Belongs to the IL-2 family.
 CC -!- DATABASE: NAME=RD Systems' cytokine source book: IL2;
 CC WWW="http://www.rndsystems.com/asp/g_sitebuilder.asp?bodyid=206".
 CC -----
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use by non-profit institutions as long as its content is in no way
 CC modified and this statement is not removed. Usage by and for commercial
 CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
 CC or send an email to license@isb-sib.ch).
 CC -----
 CC EMBL; J00264; A048509.1; -;
 CC EMBL; X01586; CAA25742.1; -;
 CC EMBL; V00564; CAA23827.1; -;
 CC EMBL; X00695; CAA25292.1; -;
 CC EMBL; K02056; AAA98792.1; -;
 CC EMBL; M13879; AAA59141.1; -;
 CC -----
 CC Query Match 96.7%; Score 147; DB 1; Length 153;
 CC Best Local Similarity 100.0%; Pred. No. 8.7e-14;
 CC Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 CC -----
 CC QY 2 APTSSSTKTQLQLLEHLLDLQMLNGINN 31
 CC |||||
 CC DB 21 APTSSSTKTQLQLLEHLLDLQMLNGINN 50
 CC -----
 CC RESULT 3
 CC IL2_HYLLA
 CC ID IL2_HYLLA STANDARD; PRT; 153 AA.
 CC AC P60569; P01585;
 CC DT 21-JUL-1986 (Rel. 01, Created)
 CC DT 21-JUL-1986 (Rel. 01, Last sequence update)
 CC DT 05-JUL-2004 (Rel. 44, Last annotation update)
 CC DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
 CC GN Name=IL2;
 CC OS Hylobates lar (Common gibbon).
 CC OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 CC OC Mammalia; Eutheria; Primates; Catarrhini; Hylobatidae; Hylobates.
 CC OX NCBI_TaxID=9580;
 CC RN [1]_TaxID=9580;
 CC RP SEQUENCE FROM N.A.
 CC RX MEDLINE=86042850; PubMed=3877307;
 CC RA Chen S.J., Holbrook N.J., Mitchell K.F., Vallone C.A., Greengard J.S.,
 CC RA Crabtree G.R., Lin Y.;
 CC RT "A viral long terminal repeat in the interleukin 2 gene of a cell line
 CC that constitutively produces interleukin 2.";
 CC Proc. Natl. Acad. Sci. U.S.A. 82:7284-7288(1985).
 CC -!- FUNCTION: Produced by T-cells in response to antigenic or
 CC mitogenic stimulation, this protein is required for T-cell
 CC proliferation and other activities crucial to regulation of the
 CC immune response. Can stimulate B cells, monocytes, lymphokine-
 CC activated killer cells, natural killer cells, and glioma cells.
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- SIMILARITY: Belongs to the IL-2 family.
 CC -----
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use by non-profit institutions as long as its content is in no way
 CC modified and this statement is not removed. Usage by and for commercial
 CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
 CC or send an email to license@isb-sib.ch).

```

CC -----
DR EMBL; M11144; AAA35454.1; -.
DR PIR; A94067; ICG12.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR SMART; SM00189; IL2; 1.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN 2; 1.
KW Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
FT SIGNAL 1 20 By similarity.
FT CHAIN 21 153 Interleukin-2.
FT CARBOHYD 23 23 O-linked (GalNac. . .) (By similarity).
FT DISULFID 78 125 By similarity.
SQ SEQUENCE 153 AA; 17628 MW; 59E2F40F25860F84 CRC64;

Query Match 96.7%; Score 147; DB 1; Length 153;
Best Local Similarity 100.0%; Pred. No. 8.7e-14;
Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 APTSSSTKKTQLQLEHLLLDLQMLINGINN 31
DB 21 APTSSSTKKTQLQLEHLLLDLQMLINGINN 50

RESULT 4
Q6NZ93 PRELIMINARY; PRT; 153 AA.
ID Q6NZ93
AC Q6NZ93;
DT 05-JUL-2004 (TrEMBLrel. 27, Created)
DT 05-JUL-2004 (TrEMBLrel. 27, Last sequence update)
DT 05-JUL-2004 (TrEMBLrel. 27, Last annotation update)
DE Interleukin 2.
GN Name=IL2;
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=PCR rescued clones;
RX MEDLINE=22388257; PubMed=12477932; DOI=10.1073/pnas.242603899;
RA Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
RA Klausner R.D., Collins E.S., Wagner L., Shemen C.M., Schuler G.D.,
RA Altschul S.F., Ziegler B., Buecaw K.H., Schaefer C.F., Bhat N.K.,
RA Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
RA Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA Stapleton M., Soares M.B., Bonaldo M.P., Casavant T.L., Scheetz T.E.,
RA Brownstein M.J., Ussdin T.B., Toshiyuki S., Carninci P., Prange C.,
RA Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullany S.J.,
RA Bosak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
RA Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA Villalón D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
RA Fahey J., Helton E., Kettelman M., Madan A., Rodriguez S., Sanchez A.,
RA Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
RA Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA Rodriguez A.C., Grimwood J., Schmutz J., Myers R.M., Butterfield Y.S.,
RA Krzywinaki M.I., Skalska U., Smailus D.E., Schnerch J.E.,
RA Jones S.J., Marra M.A.;
RT "Generation and initial analysis of more than 15,000 full-length human
RT and mouse cDNA sequences."
RL Proc. Natl. Acad. Sci. U.S.A. 99:16899-16903(2002).
RN [2]

SEQUENCE FROM N.A.
RC TISSUE=PCR rescued clones;
RA Strausberg R.;
RL Submitted (FEB-2004) to the EMBL/GenBank/DBJ databases.
DR EMBL; BC066254; AAH66254.1; -.
DR GO; GO:0005576; Cretxtracellular; IEA.
DR GO; GO:0005134; Finterleukin-2 receptor binding; IEA.
DR GO; GO:0006955; Pimmune response; IEA.
DR InterPro; IPR009079; 4_helix_cytokine.

```

```

DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN 2; 1.
SQ SEQUENCE 153 AA; 17597 MW; 1942F50F25960E88 CRC64;

Query Match 96.7%; Score 147; DB 2; Length 153;
Best Local Similarity 100.0%; Pred. No. 8.7e-14;
Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 APTSSSTKKTQLQLEHLLLDLQMLINGINN 31
DB 21 APTSSSTKKTQLQLEHLLLDLQMLINGINN 50

RESULT 5
IL2_MACFA STANDARD; PRT; 154 AA.
ID IL2_MACFA
AC Q29615;
DT 01-NOV-1997 (Rel. 35, Created)
DT 01-NOV-1997 (Rel. 35, Last sequence update)
DT 05-JUL-2004 (Rel. 44, Last annotation update)
DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
GN Name=IL2;
OS Macaca fascicularis (Crab eating macaque) (Cynomolgus monkey).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Cercopitheidae;
OC Cercopitheidae; Macaca.
OX NCBI_TaxID=9541;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=Peripheral blood;
RA Yabe M., Matsumura Y., Tatsumi M.;
RL Submitted (JUL-1995) to the EMBL/GenBank/DBJ databases.
CC -!- FUNCTION: Produced by T-cells in response to antigenic or
CC mitogenic stimulation, this protein is required for T-cell
CC proliferation and other activities crucial to regulation of the
CC immune response. Can stimulate B cells, monocytes, lymphokine-
CC activated killer cells, natural killer cells, and glioma cells (By
CC similarity).
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- SIMILARITY: Belongs to the IL-2 family.
CC
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (see http://www.ebi.ac.uk/ebis/
CC or send an email to license@ebi.ac.uk).
CC
CC EMBL; D63352; BAA09676.1; -.
DR HSP; P01585; 1M49.
DR InterPro; IPR009079; 4_helix_cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN 2; 1.
KW Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
FT SIGNAL 1 20 By similarity.
FT CHAIN 21 154 Interleukin-2.
FT CARBOHYD 23 23 O-linked (GalNac. . .) (By similarity).
FT DISULFID 78 126 By similarity.
SQ SEQUENCE 154 AA; 17686 MW; 7853FE624A54A49 CRC64;

Query Match 96.7%; Score 147; DB 1; Length 154;
Best Local Similarity 100.0%; Pred. No. 8.8e-14;
Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```

```

QY      2 APTSSSTKKTQLEHLLDQLMILNGINN 31
DB      21 APTSSSTKKTQLEHLLDQLMILNGINN 50

RESULT 6
IL2_MACMU
ID      IL2_MACMU      STANDARD;      PRT;      154 AA.
AC      P68291; P51498;
DT      01-OCT-1996 (Rel. 34, Created)
DT      01-OCT-1996 (Rel. 34, Last sequence update)
DT      25-OCT-2004 (Rel. 45, Last annotation update)
DE      Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
GN      Name=IL2;
OS      Macaca nemestrina (Pig-tailed macaque).
OC      Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC      Mammalia; Eutheria; Primates; Catarrhini; Cercopitheciidae;
OC      Cercopitheciinae; Macaca.
OX      NCBI_TaxID=9545;
RN      [1]
RP      SEQUENCE FROM N.A.
RC      TISSUE=Blood;
RX      MEDLINE=96003435; PubMed=7561102;
RA      Villinger F.J., Brar S.S., Mayne A.E., Chikkala N., Ansari A.A.;
RT      "Comparative sequence analysis of cytokine genes from human and
RT      nonhuman primates.";
RL      J. Immunol. 155:3946-3954(1995).
CC      -!- FUNCTION: Produced by T-cells in response to antigenic or
CC      mitogenic stimulation, this protein is required for T-cell
CC      proliferation and other activities crucial to regulation of the
CC      immune response. Can stimulate B cells, monocytes, lymphokine-
CC      activated killer cells, natural killer cells, and glioma cells (By
CC      similarity).
CC      -!- SUBCELLULAR LOCATION: Secreted.
CC      -!- SIMILARITY: Belongs to the IL-2 family.
CC      This SWISS-PROT entry is copyright. It is produced through a collaboration
CC      between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC      the European Bioinformatics Institute. There are no restrictions on its
CC      use by non-profit institutions as long as its content is in no way
CC      modified and this statement is not removed. Usage by and for commercial
CC      entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC      or send an email to license@isb-sib.ch).
CC      EMBL; U19847; AAB60400.1; -.
CC      HSP; P01585; IMA8.
CC      InterPro; IPR009079; 4_helix_cytokine.
CC      InterPro; IPR000779; Interleukin-2.
CC      Pfam; PF00715; IL2; 1.
CC      PRINTS; PR00265; INTERLEUKIN2.
CC      SMART; SM00189; IL2; 1.
CC      PROSITE; PS00424; INTERLEUKIN_2; 1.
CC      Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
CC      T-cell.
CC      SIGNAL      1      20      By similarity.
CC      CHAIN      21      154      Interleukin-2.
CC      CARBOHYD      23      23      O-linked (GalNAc... ) (By similarity).
CC      DISULFID      78      126      By similarity.
CC      SEQUENCE      154 AA; 17685 MW; 6AEEA480F204BA49 CRC64;

Query Match      96.7%; Score 147; DB 1; Length 154;
Best Local Similarity 100.0%; Pred. No. 8.8e-14;
Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      2 APTSSSTKKTQLEHLLDQLMILNGINN 31
DB      21 APTSSSTKKTQLEHLLDQLMILNGINN 50

RESULT 7
IL2_MACNE
ID      IL2_MACNE      STANDARD;      PRT;      154 AA.
AC      P68290; P51498;
DT      01-OCT-1996 (Rel. 34, Created)
DT      01-OCT-1996 (Rel. 34, Last sequence update)
DT      25-OCT-2004 (Rel. 45, Last annotation update)
DE      Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
GN      Name=IL2;
OS      Macaca nemestrina (Pig-tailed macaque).
OC      Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC      Mammalia; Eutheria; Primates; Catarrhini; Cercopitheciidae;
OC      Cercopitheciinae; Macaca.
OX      NCBI_TaxID=9545;
RN      [1]
RP      SEQUENCE FROM N.A.
RC      TISSUE=Blood;
RX      MEDLINE=96003435; PubMed=7561102;
RA      Villinger F.J., Brar S.S., Mayne A.E., Chikkala N., Ansari A.A.;
RT      "Comparative sequence analysis of cytokine genes from human and
RT      nonhuman primates.";
RL      J. Immunol. 155:3946-3954(1995).
CC      -!- FUNCTION: Produced by T-cells in response to antigenic or
CC      mitogenic stimulation, this protein is required for T-cell
CC      proliferation and other activities crucial to regulation of the
CC      immune response. Can stimulate B cells, monocytes, lymphokine-
CC      activated killer cells, natural killer cells, and glioma cells (By
CC      similarity).
CC      -!- SUBCELLULAR LOCATION: Secreted.
CC      -!- SIMILARITY: Belongs to the IL-2 family.
CC      This SWISS-PROT entry is copyright. It is produced through a collaboration
CC      between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC      the European Bioinformatics Institute. There are no restrictions on its
CC      use by non-profit institutions as long as its content is in no way
CC      modified and this statement is not removed. Usage by and for commercial
CC      entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC      or send an email to license@isb-sib.ch).
CC      EMBL; U19852; AAA86714.1; -.
CC      HSP; P01585; IMA8.
CC      InterPro; IPR009079; 4_helix_cytokine.
CC      InterPro; IPR000779; Interleukin-2.
CC      Pfam; PF00715; IL2; 1.
CC      PRINTS; PR00265; INTERLEUKIN2.
CC      SMART; SM00189; IL2; 1.
CC      PROSITE; PS00424; INTERLEUKIN_2; 1.
CC      Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
CC      T-cell.
CC      SIGNAL      1      20      By similarity.
CC      CHAIN      21      154      Interleukin-2.
CC      CARBOHYD      23      23      O-linked (GalNAc... ) (By similarity).
CC      DISULFID      78      126      By similarity.
CC      SEQUENCE      154 AA; 17685 MW; 6AEEA480F204BA49 CRC64;

Query Match      96.7%; Score 147; DB 1; Length 154;
Best Local Similarity 100.0%; Pred. No. 8.8e-14;
Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      2 APTSSSTKKTQLEHLLDQLMILNGINN 31
DB      21 APTSSSTKKTQLEHLLDQLMILNGINN 50

RESULT 8
IL2_PAPAN
ID      IL2_PAPAN      STANDARD;      PRT;      154 AA.
AC      Q865Y1;
DT      10-OCT-2003 (Rel. 42, Created)
DT      10-OCT-2003 (Rel. 42, Last sequence update)
DT      05-JUL-2004 (Rel. 44, Last annotation update)
DE      Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
GN      Name=IL2; Synonyms=IL-2;
OS      Papio anubis (Olive baboon).
OC      Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC      Mammalia; Eutheria; Primates; Catarrhini; Cercopitheciidae;

```

OC Cercopithecinae; Papio.
 OX NCBI_TaxID=9555;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Villinger F.;
 RT "Nonhuman primate cytokines.";
 RL Submitted (FEB-2003) to the EMBL/GenBank/DBJ databases.
 CC -!- FUNCTION: Produced by T-cells in response to antigenic or
 CC mitogenic stimulation, this protein is required for T-cell
 CC proliferation and other activities crucial to regulation of the
 CC immune response. Can stimulate B cells, monocytes, lymphokine-
 CC activated killer cells, natural killer cells, and glioma cells (By
 CC similarity).
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- SIMILARITY: Belongs to the IL-2 family.
 CC
 CC This SWISS-PROT entry is copyrighted. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use by non-profit institutions as long as its content is in no way
 CC modified and this statement is not removed. Usage by and for commercial
 CC entities requires a license agreement (See <http://www.isb-sib.ch/announce/>
 CC or send an email to license@isb-sib.ch).
 CC
 CC EMBL; AY234220; AAO85333.1; -.
 DR HSP; P01585; 1M49.
 DR InterPro; IPR009079; 4_helix_cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 DR Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
 KW T-cell.
 FT SIGNAL 1 20 By similarity.
 FT CHAIN 21 154 Interleukin-2.
 FT DISULFID 78 126 By similarity.
 FT CARBOHYD 23 23 O-linked (GalNAc...) (By similarity).
 SQ SEQUENCE 154 AA; 17713 MW; 47F486BDF204AD6E CRC64;
 Query Match 96.7%; Score 147; DB 1; Length 154;
 Best Local Similarity 100.0%; Pred. No. 8.8e-14; Mismatches 0; Indels 0; Gaps 0;
 Matches 30; Conservative 0;
 QY 2 APTSSSTKTKTQLQLEHLLLDQLMILNGINN 31
 Db 21 APTSSSTKTKTQLQLEHLLLDQLMILNGINN 50
 RESULT 9
 IL2_SAISC
 ID IL2_SAISC STANDARD; PRT; 154 AA.
 AC Q8MKH2;
 DT 10-OCT-2003 (Rel. 42, Created)
 DT 10-OCT-2003 (Rel. 42, Last sequence update)
 DT 05-JUL-2004 (Rel. 44, Last annotation update)
 DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
 GN Name=IL2;
 OS Saimiri sciureus (Common squirrel monkey).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Platyrrhini; Cebidae; Saimiri.
 OX NCBI_TaxID=9521;
 RN [1]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=21972723; PubMed=11976788; DOI=10.1007/s00251-002-0443-Y;
 RA Herad J.M., Lavergne A., Kazanji M.;
 RT "Molecular cloning, characterization, and quantification of squirrel
 RT monkey (Saimiri sciureus) th1 and Th2 cytokines.";
 RL Immunogenetics 54:20-29(2002).
 CC -!- FUNCTION: Produced by T-cells in response to antigenic or
 CC mitogenic stimulation, this protein is required for T-cell
 CC proliferation and other activities crucial to regulation of the

CC immune response. Can stimulate B cells, monocytes, lymphokine-
 CC activated killer cells, natural killer cells, and glioma cells (By
 CC similarity).
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- SIMILARITY: Belongs to the IL-2 family.
 CC
 CC This SWISS-PROT entry is copyrighted. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use by non-profit institutions as long as its content is in no way
 CC modified and this statement is not removed. Usage by and for commercial
 CC entities requires a license agreement (See <http://www.isb-sib.ch/announce/>
 CC or send an email to license@isb-sib.ch).
 CC
 CC EMBL; AF294755; AAK92042.1; -.
 DR HSP; P01585; 1M49.
 DR InterPro; IPR009079; 4_helix_cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 DR Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
 KW T-cell.
 FT SIGNAL 1 20 By similarity.
 FT CHAIN 21 154 Interleukin-2.
 FT DISULFID 78 126 By similarity.
 FT CARBOHYD 23 23 O-linked (GalNAc...) (By similarity).
 SQ SEQUENCE 154 AA; 17657 MW; AA642BABCBA87569 CRC64;
 Query Match 95.4%; Score 145; DB 1; Length 154;
 Best Local Similarity 96.7%; Pred. No. 1.8e-13; Mismatches 1; Indels 0; Gaps 0;
 Matches 29; Conservative 1;
 QY 2 APTSSSTKTKTQLQLEHLLLDQLMILNGINN 31
 Db 21 APTSSSTKTKTQLQLEHLLLDQLMILNGINN 50
 RESULT 10
 Q7JFM2
 ID Q7JFM2 PRELIMINARY; PRT; 154 AA.
 AC Q7JFM2;
 DT 05-JUL-2004 (TReMBLrel. 27, Created)
 DT 05-JUL-2004 (TReMBLrel. 27, Last sequence update)
 DT 05-JUL-2004 (TReMBLrel. 27, Last annotation update)
 DE IL-2.
 OS Aotus lemurinus (Northern gray-necked night monkey).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Platyrrhini; Cebidae; Aotidae; Aotus.
 OX NCBI_TaxID=43147;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Murillo L.A., Hernandez E., Echeverry S.J., Mendez J.A., Moreno A.,
 RA Patarroyo M.E.;
 RL Submitted (FEB-1997) to the EMBL/GenBank/DBJ databases.
 DR EMBL; U88364; AAD41534.1; -.
 DR GO; GO:0005576; C:extracellular; IEA.
 DR GO; GO:0005134; F:Interleukin-2 receptor binding; IEA.
 DR GO; GO:0006955; P:immune response; IEA.
 DR InterPro; IPR009079; 4_helix_cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PROSITE; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 SQ SEQUENCE 154 AA; 17675 MW; AB752ABBADA96469 CRC64;
 Query Match 95.4%; Score 145; DB 2; Length 154;
 Best Local Similarity 96.7%; Pred. No. 1.8e-13; Mismatches 1; Indels 0; Gaps 0;
 Matches 29; Conservative 1;


```
QY 2 APTSSSTKKTQLEHLLDLQMLNGINN 31
Db 21 APTSSSTKKTQLEHLLDLQMLNGINN 50

RESULT 11
Q7JFM3
ID Q7JFM3 PRELIMINARY; PRT; 154 AA.
AC Q7JFM3;
DT 05-JUL-2004 (TREMBlrel. 27, Created)
DT 05-JUL-2004 (TREMBlrel. 27, Last sequence update)
DT 05-JUL-2004 (TREMBlrel. 27, Last annotation update)
DE IL-2.
OS Aotus nigriceps (Black-headed owl monkey).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Platyrrhini; Cebidae; Aotinae; Aotus.
OX NCBI_TaxID=57175;
RN [1]
RP SEQUENCE FROM N.A.
RA Murillo L.A., Hernandez E., Echeverry S.J., Mendez J.A., Moreno A.,
RA Patarrovo M.E.;
RL Submitted (FEB-1997) to the EMBL/GenBank/DBJ databases.
DR EMBL; U88363; AAD41536.1; -.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; P:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR009079; 4 helix cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN_2; 1.
SQ SEQUENCE 154 AA, 17675 MW, AB752ABBADA96469 CRC64;

Query Match 95.4%; Score 145; DB 2; Length 154;
Best Local Similarity 96.7%; Pred. No. 1.8e-13;
Matches 29; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 2 APTSSSTKKTQLEHLLDLQMLNGINN 31
Db 21 APTSSSTKKTQLEHLLDLQMLNGINN 50

RESULT 12
Q7JFM4
ID Q7JFM4 PRELIMINARY; PRT; 154 AA.
AC Q7JFM4;
DT 05-JUL-2004 (TREMBlrel. 27, Created)
DT 05-JUL-2004 (TREMBlrel. 27, Last sequence update)
DT 05-JUL-2004 (TREMBlrel. 27, Last annotation update)
DE IL-2.
OS Aotus vociferans (Spix's owl monkey).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Platyrrhini; Cebidae; Aotinae; Aotus.
OX NCBI_TaxID=57176;
RN [1]
RP SEQUENCE FROM N.A.
RA Murillo L.A., Hernandez E., Echeverry S.J., Mendez J.A., Moreno A.,
RA Patarrovo M.E.;
RL Submitted (FEB-1997) to the EMBL/GenBank/DBJ databases.
DR EMBL; U88362; AAD41537.1; -.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; P:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR009079; 4 helix cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN_2; 1.
SQ SEQUENCE 154 AA, 17675 MW, AB752ABBADA96469 CRC64;

Query Match 95.4%; Score 145; DB 2; Length 154;
Best Local Similarity 96.7%; Pred. No. 1.8e-13;
Matches 29; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 2 APTSSSTKKTQLEHLLDLQMLNGINN 31
Db 21 APTSSSTKKTQLEHLLDLQMLNGINN 50

RESULT 13
Q7JFM5
ID Q7JFM5 PRELIMINARY; PRT; 154 AA.
AC Q7JFM5;
DT 05-JUL-2004 (TREMBlrel. 27, Created)
DT 05-JUL-2004 (TREMBlrel. 27, Last sequence update)
DT 05-JUL-2004 (TREMBlrel. 27, Last annotation update)
DE IL-2.
OS Aotus nancymae (Ma's night monkey).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Platyrrhini; Cebidae; Aotinae; Aotus.
OX NCBI_TaxID=37293;
RN [1]
RP SEQUENCE FROM N.A.
RA Murillo L.A., Hernandez E., Echeverry S.J., Mendez J.A., Moreno A.,
RA Patarrovo M.E.;
RL Submitted (FEB-1997) to the EMBL/GenBank/DBJ databases.
DR EMBL; U88361; AAD41535.1; -.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; P:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR009079; 4 helix cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN_2; 1.
SQ SEQUENCE 154 AA, 17675 MW, AB752ABBADA96469 CRC64;

Query Match 95.4%; Score 145; DB 2; Length 154;
Best Local Similarity 96.7%; Pred. No. 1.8e-13;
Matches 29; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 2 APTSSSTKKTQLEHLLDLQMLNGINN 31
Db 21 APTSSSTKKTQLEHLLDLQMLNGINN 50

RESULT 14
Q9XS38
ID Q9XS38 PRELIMINARY; PRT; 154 AA.
AC Q9XS38;
DT 01-NOV-1999 (TREMBlrel. 12, Created)
DT 01-NOV-1999 (TREMBlrel. 12, Last sequence update)
DT 01-MAR-2004 (TREMBlrel. 26, Last annotation update)
DE IL-2.
OS Papio hamadryas (Hamadryas baboon).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecoidea;
OC Cercopithecoidea; Papio.
OX NCBI_TaxID=95557;
RN [1]
RP SEQUENCE FROM N.A.
RA Murillo L.A., Hernandez E., Echeverry S.J., Mendez J.A., Moreno A.,
RA Patarrovo M.E.;
RL Submitted (FEB-1997) to the EMBL/GenBank/DBJ databases.
DR EMBL; U88365; AAD41538.1; -.
DR HSP; P60568; IIRL.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; P:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
```

```
QY 2 APTSSSTKKTQLEHLLDLQMLNGINN 31
Db 21 APTSSSTKKTQLEHLLDLQMLNGINN 50

RESULT 13
Q7JFM5
ID Q7JFM5 PRELIMINARY; PRT; 154 AA.
AC Q7JFM5;
DT 05-JUL-2004 (TREMBlrel. 27, Created)
DT 05-JUL-2004 (TREMBlrel. 27, Last sequence update)
DT 05-JUL-2004 (TREMBlrel. 27, Last annotation update)
DE IL-2.
OS Aotus nancymae (Ma's night monkey).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Platyrrhini; Cebidae; Aotinae; Aotus.
OX NCBI_TaxID=37293;
RN [1]
RP SEQUENCE FROM N.A.
RA Murillo L.A., Hernandez E., Echeverry S.J., Mendez J.A., Moreno A.,
RA Patarrovo M.E.;
RL Submitted (FEB-1997) to the EMBL/GenBank/DBJ databases.
DR EMBL; U88361; AAD41535.1; -.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; P:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR009079; 4 helix cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN_2; 1.
SQ SEQUENCE 154 AA, 17675 MW, AB752ABBADA96469 CRC64;

Query Match 95.4%; Score 145; DB 2; Length 154;
Best Local Similarity 96.7%; Pred. No. 1.8e-13;
Matches 29; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 2 APTSSSTKKTQLEHLLDLQMLNGINN 31
Db 21 APTSSSTKKTQLEHLLDLQMLNGINN 50

RESULT 14
Q9XS38
ID Q9XS38 PRELIMINARY; PRT; 154 AA.
AC Q9XS38;
DT 01-NOV-1999 (TREMBlrel. 12, Created)
DT 01-NOV-1999 (TREMBlrel. 12, Last sequence update)
DT 01-MAR-2004 (TREMBlrel. 26, Last annotation update)
DE IL-2.
OS Papio hamadryas (Hamadryas baboon).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecoidea;
OC Cercopithecoidea; Papio.
OX NCBI_TaxID=95557;
RN [1]
RP SEQUENCE FROM N.A.
RA Murillo L.A., Hernandez E., Echeverry S.J., Mendez J.A., Moreno A.,
RA Patarrovo M.E.;
RL Submitted (FEB-1997) to the EMBL/GenBank/DBJ databases.
DR EMBL; U88365; AAD41538.1; -.
DR HSP; P60568; IIRL.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; P:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
```

```

DR InterPro; IPR000979; 4 helix cytokine.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN 2; 1.
SQ SEQUENCE 154 AA; 17675 MW; AB752ABBADA96469 CRC64;

Query Match 95.4%; Score 145; DB 2; Length 154;
Best Local Similarity 96.7%; Pred. No. 1.8e-13;
Matches 29; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 2 APTSSSTKTKTQLQLEHLLLDLQMLNGINN 31
DB 21 APTSSSTKTKTQLQLEHLLLDLQMLNGINN 50

RESULT 15
Q6QWNO PRELIMINARY; PRT; 133 AA.
AC Q6QWNO;
DT 05-JUL-2004 (TrEMBLrel. 27, Created)
DT 05-JUL-2004 (TrEMBLrel. 27, Last sequence update)
DE Interleukin-2.
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RA Chikara S.K., Sharma G.;
RL Submitted (JAN-2004) to the EMBL/GenBank/DBJ databases.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR000979; 4 helix cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN 2; 1.
SQ SEQUENCE 133 AA; 15462 MW; 1699F680A09DB3B0 CRC64;

Query Match 94.1%; Score 143; DB 2; Length 133;
Best Local Similarity 100.0%; Pred. No. 3e-13;
Matches 29; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 3 PTSSSTKTKTQLQLEHLLLDLQMLNGINN 31
DB 2 PTSSSTKTKTQLQLEHLLLDLQMLNGINN 30

RESULT 17
IL2_CERTO STANDARD; PRT; 154 AA.
AC P46649;
DT 01-NOV-1995 (Rel. 32, Created)
DT 01-NOV-1995 (Rel. 32, Last sequence update)
DT 05-JUL-2004 (Rel. 44, Last annotation update)
DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
GN Name=IL2;
OS Cercopithecus torquatus atys (Red-crowned mangabey) (Sooty mangabey).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
OC Cercopithecinae; Cercopithecus.
OX NCBI_TaxID=9531;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=Blood;
RX MEDLINE=96003435; PubMed=7561102;
RA Villinger F.J., Brar S.S., Mayne A.E., Chikkala N., Ansari A.A.;
RT "Comparative sequence analysis of cytokine genes from human and nonhuman primates.";
RL J. Immunol. 155:3946-3954 (1995).
CC -!- FUNCTION: Produced by T-cells in response to antigenic or mitogenic stimulation, this protein is required for T-cell proliferation and other activities crucial to regulation of the immune response. Can stimulate B cells, monocytes, lymphokine-activated killer cells, natural killer cells, and glioma cells.
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- SIMILARITY: Belongs to the IL-2 family.
CC -----
CC This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/ or send an email to license@isb-sib.ch).
CC -----
DR HSP; P01585; 1M47.
DR InterPro; IPR000979; 4 helix cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN 2; 1.
KW Cytokine; Glycoprotein; Growth factor; Immune response; Signal; T-cell.
FT SIGNAL 1 20 By similarity.
FT CHAIN 21 154 Interleukin-2.
FT CARBOHYD 23 23 O-linked (GalNAc... ) (By similarity).

```

FT DISULFID 78 126 By similarity.
 FT VARIANT 25 25 R -> S.
 FT VARIANT 74 74 K -> E.
 SQ SEQUENCE 154 AA; 17754 MW; 9FEB51814204BA48 CRC64;

Query Match 93.4%; Score 142; DB 1; Length 154;
 Best Local Similarity 96.7%; Pred. No. 4.9e-13;
 Matches 29; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 2 APTSSSTKTKTQLEHLLDLQMLINGINN 31
 |||||
 DB 21 APTSSSTKTKTQLEHLLDLQMLINGINN 50
 |||||

RESULT 18

Q6NZ91 PRELIMINARY; PRT; 153 AA.
 AC Q6NZ91;
 DT 05-JUL-2004 (TrEMBLrel. 27, Created)
 DT 05-JUL-2004 (TrEMBLrel. 27, Last sequence update)
 DE Interleukin 2,
 GN Name=IL2;
 OS Homo sapiens (Human).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
 OX NCBI_TaxID=9606;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE=PCR rescued clones;
 RX MEDLINE=22388257; PubMed=12477932; DOI=10.1073/pnas.242603899;
 RA Strausberg R.L., Feingold E.A., Grouse L.H., Dege J.G.,
 RA Klausner R.D., Collins P.S., Wagner L., Shenmen C.M., Schuler G.D.,
 RA Altschul S.F., Zesberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
 RA Hopkins R.J., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
 RA Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
 RA Stapleton M., Soares M.B., Bonaldo M.F., Casavant T.L., Scheetz T.E.,
 RA Brownstein M.J., Uslin T.B., Toshiyuki S., Carninci P., Prange C.,
 RA Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullaly S.J.,
 RA Bosak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gnaratne P.H.,
 RA Richardson S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
 RA Villalón D.K., Murny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
 RA Fahey J., Helton E., Kettman M., Madan A., Rodrigues S., Sanchez A.,
 RA Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
 RA Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
 RA Rodriguez A.C., Grimwood J., Schmutz J., Myers R.M., Butterfield Y.S.,
 RA Krzywinski M.I., Skalska U., Smallos J., Schnermer A., Schein J.E.,
 RA Jones S.J., Marra M.A.;
 RT "Generation and initial analysis of more than 15,000 full-length human
 and mouse cDNA sequences.";
 RL Proc. Natl. Acad. Sci. U.S.A. 99:16899-16903(2002).
 RN [2]
 RP SEQUENCE FROM N.A.
 RC TISSUE=PCR rescued clones;
 RA Strausberg R.;
 RL Submitted (FEB-2004) to the EMBL/GenBank/DBJ databases.
 DR EMBL; BC066256; AAH66256.1; -;
 DR GO; GO:0005576; C:extracellular; IEA.
 DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
 DR GO; GO:0006955; P:immune response; IEA.
 DR InterPro; IPRO009079; 4_helix cytokine.
 DR InterPro; IPRO00779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PRO0265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 SQ SEQUENCE 153 AA; 17644 MW; 59F9980409964F84 CRC64;

Query Match 90.1%; Score 137; DB 2; Length 153;
 Best Local Similarity 96.7%; Pred. No. 2.7e-12;
 Matches 29; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 2 APTSSSTKTKTQLEHLLDLQMLINGINN 31
 |||||
 DB 21 ALTSSSTKTKTQLEHLLDLQMLINGINN 50
 |||||

RESULT 19

Q13169 PRELIMINARY; PRT; 156 AA.
 AC Q13169;
 DT 01-NOV-1996 (TrEMBLrel. 01, Created)
 DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
 DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
 DE Interleukin 2.
 GN Name=IL2;
 OS Homo sapiens (Human).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
 OX NCBI_TaxID=9606;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Xu D., Wu Y., Chen J., Yu L., Zhong M., Hui Y., Qu H.;
 RT "Expression of human IL-2 from gene transferred mouse melanoma cells
 and its effect on the growth of mouse melanoma.";
 RL Chin. J. Microbiol. Immunol. 13:78-82(1993).
 RN [2]
 RP SEQUENCE FROM N.A.
 RA Xu L.;
 RL Submitted (APR-1995) to the EMBL/GenBank/DBJ databases.
 DR EMBL; U25676; AAA70092.1; -;
 DR HSP; P60568; IIRL.
 DR GO; GO:0005576; C:extracellular; TAS.
 DR GO; GO:0005134; F:interleukin-2 receptor binding; TAS.
 DR GO; GO:0019209; P:kinase activator activity; TAS.
 DR GO; GO:0006956; P:anti-apoptosis; TAS.
 DR GO; GO:0007267; P:cell-cell signaling; TAS.
 DR GO; GO:0006955; P:immune response; TAS.
 DR GO; GO:0030307; P:natural killer cell activation; TAS.
 DR GO; GO:0030101; P:positive regulation of cell growth; TAS.
 DR GO; GO:0008284; P:positive regulation of cell proliferation; TAS.
 DR GO; GO:0030217; P:T-cell differentiation; TAS.
 DR InterPro; IPRO009079; 4_helix cytokine.
 DR InterPro; IPRO00779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PRO0265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 SQ SEQUENCE 156 AA; 18002 MW; 8E0452D43B336389 CRC64;

Query Match 89.1%; Score 135.5; DB 2; Length 156;
 Best Local Similarity 90.9%; Pred. No. 4.7e-12;
 Matches 30; Conservative 0; Mismatches 0; Indels 3; Gaps 1;

QY 2 APTSSSTKTKTQLEHLLDLQMLINGINN 31
 |||||
 DB 21 APTSSSTKTKTQLEHLLDLQMLINGINN 53
 |||||

RESULT 20

Q16334 PRELIMINARY; PRT; 139 AA.
 AC Q16334;
 DT 01-NOV-1996 (TrEMBLrel. 01, Created)
 DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
 DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
 DE IL-2 protein (Fragment).
 GN Name=IL-2;
 OS Homo sapiens (Human).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
 OX NCBI_TaxID=9606;
 RN [1]
 RP SEQUENCE FROM N.A.

```

RX MEDLINE=95239150; PubMed=7722480;
RA Eizenberg O., Faber-Elman A., Lotan M., Schwartz M.;
RT "Interleukin-2 transcripts in human and rodent brains: possible
expression by astrocytes.";
RL J. Neurochem. 64:1928-1936(1995).
DR EMBL; S7835; AAD14264.1; -.
DR HSSP; P60568; 1IRL.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0003134; F:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR009079; 4_helix_cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN_2; 1.
DR NON TER 139 139
SQ SEQUENCE 139 AA; 15986 MW; 731FBA406D0C63C5 CRC64;

Query Match 88.2%; Score 134; DB 2; Length 139;
Best Local Similarity 93.3%; Pred. No. 6.9e-12;
Matches 28; Conservative 0; Mismatches 2; Indels 0; Gaps 0;

QY 2 APTSSSTKTQLQLEHLLDLQWLINGINN 31
DB 17 APTSSSTKTQLXLEHLLDLQWLINGINN 46

RESULT 21
IL2_MIRAN
ID IL2_MIRAN STANDARD; PRT; 154 AA.
AC O62641;
DT 15-DEC-1998 (Rel. 37, Created)
DT 15-DEC-1998 (Rel. 37, Last sequence update)
DT 05-JUL-2004 (Rel. 44, Last annotation update)
DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
GN Name=IL2;
OS Mirounga angustirostris (Northern elephant seal).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Carnivora; Pinnipedia; Phocidae; Mirounga.
OX NCBI_TaxID=9716;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=98136706; PubMed=9476229;
RA Shoda L.K.W., Brown W.C., Rice-Ficht A.C.;
RT "Sequence and characterization of phocine interleukin 2.";
RL J. Wildl. Dis. 34:81-90(1998).
CC -!- FUNCTION: Produced by T-cells in response to antigenic or
CC mitogenic stimulation, this protein is required for T-cell
CC proliferation and other activities crucial to regulation of the
CC immune response. Can stimulate B cells, monocytes, lymphokine-
CC activated killer cells, natural killer cells, and glioma cells (By
CC similarity).
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- SIMILARITY: Belongs to the IL-2 family.
CC -----
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC -----
DR EMBL; U79187; AAC12258.1; -.
DR HSSP; P01585; 1M49.
DR InterPro; IPR009079; 4_helix_cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.

```

```

DR PROSITE; PS00424; INTERLEUKIN_2; 1.
KW Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
KW T-cell.
FT SIGNAL 1 20 By similarity.
FT CHAIN 21 154 Interleukin-2.
FT CARBOHYD 23 23 O-linked (GalNAc... ) (By similarity).
FT DISULFID 78 126 By similarity.
SQ SEQUENCE 154 AA; 17661 MW; 0C92337A4B16B6BB CRC64;

Query Match 76.3%; Score 116; DB 1; Length 154;
Best Local Similarity 73.3%; Pred. No. 3.9e-09;
Matches 22; Conservative 6; Mismatches 2; Indels 0; Gaps 0;

QY 2 APTSSSTKTQLQLEHLLDLQWLINGINN 31
DB 21 APTSSSTKTQQLLEHLLDLRLINGVNN 50

RESULT 22
IL2_FELCA
ID IL2_FELCA STANDARD; PRT; 154 AA.
AC Q07885;
DT 01-OCT-1994 (Rel. 30, Created)
DT 01-OCT-1994 (Rel. 30, Last sequence update)
DT 05-JUL-2004 (Rel. 44, Last annotation update)
DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
GN Name=IL2;
OS Felis silvestris catus (Cat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Carnivora; Fissipedia; Felidae; Felis.
OX NCBI_TaxID=9685;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=93356765; PubMed=8352761;
RA Cozzi P.J., Padrid P.A., Takeda J., Alegre M.-A., Yuhki N., Leff A.R.;
RT "Sequence and functional characterization of feline interleukin 2.";
RL Biochem. Biophys. Res. Commun. 194:1038-1043(1993).
RN [2]
RP SEQUENCE FROM N.A.
RA Litman R., Gibbs C., Good R.A., Day N.K.;
RL Submitted (NOV-1994) to the EMBL/GenBank/DBJ databases.
CC -!- FUNCTION: Produced by T-cells in response to antigenic or
CC mitogenic stimulation, this protein is required for T-cell
CC proliferation and other activities crucial to regulation of the
CC immune response. Can stimulate B cells, monocytes, lymphokine-
CC activated killer cells, natural killer cells, and glioma cells.
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- SIMILARITY: Belongs to the IL-2 family.
CC -----
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC -----
DR EMBL; L19402; AAA02865.1; -.
DR EMBL; L25408; AAA51431.1; -.
DR PIR; JN0698; JN0698.
DR HSSP; P01585; 1M49.
DR InterPro; IPR009079; 4_helix_cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN_2; 1.
KW Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
KW T-cell.
FT SIGNAL 1 20 By similarity.
FT CHAIN 21 154 Interleukin-2.
FT DISULFID 78 126 By similarity.

```

```

FT CARBOHYD 111 111 N-linked (GlcNAc...) (Potential).
FT CONFLICT 3 4 KI -> RM (in Ref. 2).
FT CONFLICT 150 150 F -> I (in Ref. 2).
SQ SEQUENCE 154 AA; 17653 MW; 2E71E3BD8B9665EF CRC64;

Query Match 75.0%; Score 114; DB 1; Length 154;
Best Local Similarity 73.3%; Pred. No. 7.7e-09;
Matches 22; Conservative 5; Mismatches 3; Indels 0; Gaps 0;

QY 2 APTSSSTKKTQLQLEHLLDLQMLNGINN 31
  |||||:|||||:|||||:|||||:|||||:
Db 21 APASSTKKTQQLQLEHLLDLRLNGVNN 50

RESULT 23
Q9XT83 PRELIMINARY; PRT; 155 AA.
AC Q9XT83;
DT 01-NOV-1999 (TrEMBLrel. 12, Created)
DT 01-NOV-1999 (TrEMBLrel. 12, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Interleukin 2.
OS Halichoerus grypus (Gray seal).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Carnivora; Pinnipedia; Phocidae; Halichoerus.
OX NCBI_TaxID=9711;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=99221046; PubMed=10206205; DOI=10.1016/S0165-2427(99)00009-4;
RA St-Laurent G., Beliveau C., Archambault D.;
RT "Molecular cloning and phylogenetic analysis of beluga whale
RT (Delphinapterus leucas) and grey seal (Halichoerus grypus) interleukin
RT 2.";
RL Vet. Immunol. Immunopathol. 67:385-394(1999).
DR EMBL; AF072871; AD40848.1; -.
DR HSSP; P60568; IIRL.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; P:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR009079; 4_helix_cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF00715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
FT NON_TER 1
FT NON_TER 66
SQ SEQUENCE 66 AA; 7389 MW; 22A893P79DA2AE47 CRC64;

Query Match 70.7%; Score 107.5; DB 2; Length 66;
Best Local Similarity 71.0%; Pred. No. 2.8e-08;
Matches 22; Conservative 6; Mismatches 2; Indels 1; Gaps 1;

QY 2 AP-TSSSTKKTQLQLEHLLDLQMLNGINN 31
  |||||:|||||:|||||:|||||:|||||:
Db 14 APTTSSSTKKTQQLQLEHLLDLRLNGVNN 44

RESULT 25
IL2 CANFA
ID IL2 CANFA STANDARD; PRT; 155 AA.
AC Q29416; Q28249;
DT 15-JUL-1998 (Rel. 36, Created)
DT 15-JUL-1998 (Rel. 36, Last sequence update)
DT 05-JUL-2004 (Rel. 44, Last annotation update)
DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
GN Name=IL2;
OS Canis familiaris (Dog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.
OX NCBI_TaxID=9615;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=ABRED21/12/93; TISSUE=Lymph node;
RX MEDLINE=95337423; PubMed=7612930;
RA Dunham S.P., Argyle D.J., Onions D.E.;
RT "The isolation and sequence of canine interleukin-2.";
RL DNA Seq. 5:177-180(1995).
RN [2]
RP SEQUENCE FROM N.A.
RX MEDLINE=96016696; PubMed=8571541; DOI=10.1016/0165-2427(94)05400-M;
RA Somborg R.L., Pullen R.P., Casal M.L., Patterson D.F., Felsburg P.J.,
RA Henthorn P.S.;
RT "A single nucleotide insertion in the canine interleukin-2 receptor
RT gamma chain results in X-linked severe combined immunodeficiency
RT disease.";
RL Vet. Immunol. Immunopathol. 47:203-213(1995).
RN [3]
RP SEQUENCE FROM N.A.
RC STRAIN=Beagle; TISSUE=Spleen;
RX MEDLINE=95347614; PubMed=7622066; DOI=10.1016/0378-1119(95)00078-K;
RA Knapp D.W., Williams J.S., Andrisani O.M.;
RT "Cloning of the canine interleukin-2-encoding cDNA.";
RL Gene 159:281-282(1995).
CC -!- FUNCTION: Produced by T-cells in response to antigenic or
CC mitogenic stimulation, this protein is required for T-cell
CC proliferation and other activities crucial to regulation of the
CC immune response. Can stimulate B cells, monocytes, lymphokine-
CC activated killer cells, natural killer cells, and glioma cells.
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- SIMILARITY: Belongs to the IL-2 family.
CC -----
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way

```

CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See <http://www.isb-sib.ch/announce/>
CC or send an email to license@isb-sib.ch).
CC -----

```
DR EMBL; D30710; BAA06378.1; -;  
DR EMBL; U28141; AAA68969.1; -;  
DR EMBL; U11689; AAA75360.1; -;  
DR HSSP; P01585; 3INK.  
DR InterPro; IPR009079; 4_helix_cytokine.  
DR InterPro; IPR000779; Interleukin-2.  
DR Pfam; PF00715; IL2; 1.  
DR PRINTS; PR00265; INTERLEUKIN2.  
DR ProDom; PD003649; Interleukin-2; 1.  
DR SMART; SM00189; IL2; 1.  
DR PROSITE; PS00424; INTERLEUKIN_2; 1.  
KW Cytokine; Glycoprotein; Growth factor; Immune response; Signal;  
T-cell.  
FT SIGNAL 1 20 By similarity.  
FT CHAIN 21 155 Interleukin-2.  
FT CARBOHYD 24 24 O-linked (GalNAc... ) (By similarity).  
FT CARBOHYD 112 112 N-linked (GlcNAc... ) (Potential).  
FT DISULFID 79 127 By similarity.  
FT CONFLICT 4 4 M -> I (in Ref. 3).  
FT CONFLICT 37 37 Q -> R (in Ref. 3).  
FT CONFLICT 151 151 F -> Y (in Ref. 3).  
FT CONFLICT 154 154 L -> M (in Ref. 3).  
SQ SEQUENCE 155 AA; 17668 MW; D123E486B7F4AC1D CRC64;
```

```
Query Match 70.7%; Score 107.5; DB 1; Length 155;  
Best Local Similarity 71.0%; Pred. No. 7.3e-08;  
Matches 22; Conservative 6; Mismatches 2; Indels 1; Gaps 1;  
  
QY 2 AP-TSSSTKKTQLEHLLDLQMLNGINN 31  
DB 21 APTSSSTKETEQMEQLLDLQLLNGVNN 51
```

```
RESULT 26  
Q9TV12  
ID Q9TV12 PRELIMINARY; PRT; 79 AA.  
AC Q9TV12;  
DT 01-MAY-2000 (TRENBLrel. 13, Created)  
DT 01-MAY-2000 (TRENBLrel. 13, Last sequence update)  
DT 01-MAR-2004 (TRENBLrel. 26, Last annotation update)  
DE Interleukin-2 (Fragment).  
OS Canis familiaris (Dog).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.  
OX NCBI_TaxID=9615;  
RN [1]  
RP SEQUENCE FROM N.A.  
RA German A.J., Helps C.R., Harley R., Hall E.J., Day M.J.;  
RL Submitted (SEP-1998) to the EMBL/GenBank/DBSJ databases.  
DR EMBL; AF091131; RAD46989.1; -;  
DR HSSP; P60568; IIRL.  
DR GO; GO:0005576; C:extracellular; IEA.  
DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.  
DR GO; GO:0006955; P:immune response; IEA.  
DR InterPro; IPR009079; 4_helix_cytokine.  
DR InterPro; IPR000779; Interleukin-2.  
DR Pfam; PF00715; IL2; 1.  
DR PRINTS; PR00265; INTERLEUKIN2.  
DR ProDom; PD003649; Interleukin-2; 1.  
DR SMART; SM00189; IL2; 1.  
DR PROSITE; PS00424; INTERLEUKIN_2; 1.  
FT NON TER 1 1  
FT NON TER 79 79  
SQ SEQUENCE 79 AA; 9087 MW; 83079BF8F8A659BD CRC64;
```

```
Query Match 70.4%; Score 107; DB 2; Length 79;  
Best Local Similarity 71.4%; Pred. No. 4.1e-08;  
Matches 20; Conservative 6; Mismatches 2; Indels 0; Gaps 0;
```

```
QY 4 TSSSTKKTQLEHLLDLQMLNGINN 31  
DB 7 TSSSTKETEQMEQLLDLQLLNGVNN 34  
  
RESULT 27  
Q80XG3  
ID Q80XG3 PRELIMINARY; PRT; 152 AA.  
AC Q80XG3;  
DT 01-JUN-2003 (TRENBLrel. 24, Created)  
DT 01-JUN-2003 (TRENBLrel. 24, Last sequence update)  
DT 01-MAR-2004 (TRENBLrel. 26, Last annotation update)  
DE Interleukin-2 (Fragment).  
GN Name=IL2;  
OS Peromyscus maniculatus (Deer mouse).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Sigmodontinae;  
OC Peromyscus.  
OX NCBI_TaxID=10042;  
RN [1]  
RP SEQUENCE FROM N.A.  
RA Schountz T., Buniger A., Davenport B., Hegg T.;  
RT "Cloning of deer mouse IL-2, IL-12 p35, IL-21, GM-CSF, CCL3 and CCL4  
cDNAs";  
RL Submitted (MAR-2003) to the EMBL/GenBank/DBSJ databases.  
DR EMBL; AY247760; AAP04419.1; -;  
DR HSSP; P60568; IIRL.  
DR GO; GO:0005576; C:extracellular; IEA.  
DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.  
DR GO; GO:0006955; P:immune response; IEA.  
DR InterPro; IPR009079; 4_helix_cytokine.  
DR InterPro; IPR000779; Interleukin-2.  
DR Pfam; PF00715; IL2; 1.  
DR PRINTS; PR00265; INTERLEUKIN2.  
DR ProDom; PD003649; Interleukin-2; 1.  
DR SMART; SM00189; IL2; 1.  
DR PROSITE; PS00424; INTERLEUKIN_2; 1.  
FT NON TER 152 152  
SQ SEQUENCE 152 AA; 17095 MW; 798D13514AD0CC93 CRC64;
```

```
Query Match 70.4%; Score 107; DB 2; Length 152;  
Best Local Similarity 70.0%; Pred. No. 8.5e-08;  
Matches 21; Conservative 5; Mismatches 4; Indels 0; Gaps 0;
```

```
QY 2 APTSSSTKKTQLEHLLDLQMLNGINN 31  
DB 21 APTSSSTKETQOHLEQLMDLVLKGINN 50  
  
RESULT 28  
IL2_RABIT  
ID IL2_RABIT STANDARD; PRT; 153 AA.  
AC O77620;  
DT 15-JUL-1999 (Rel. 38, Created)  
DT 15-JUL-1999 (Rel. 38, Last sequence update)  
DT 05-JUL-2004 (Rel. 44, Last annotation update)  
DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).  
GN Name=IL2;  
OS Oryctolagus cuniculus (Rabbit).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.  
OX NCBI_TaxID=9986;  
RN [1]  
RP SEQUENCE FROM N.A.  
RA TISSUE=Lymph node;  
RC MEDLINE=20304414; PubMed=10843729; DOI=10.1006/cyto.1999.0658;  
RT Perkins H.D., van Leeuwen B.H., Hardy C.M., Kerr P.J.;  
RT "The complete cDNA sequences of IL-2, IL-4, IL-6 and IL-10 from the  
RT European rabbit (Oryctolagus cuniculus).";  
RL Cytokine 12:555-565(2000).  
CC -!- FUNCTION: Produced by T-cells in response to antigenic or  
CC mitogenic stimulation, this protein is required for T-cell  
CC proliferation and other activities crucial to regulation of the
```

Cytokine 12:555-565(2000).
EMBL; AF169168; AAF86652.1; -.
HSSP; P60568; 1 IRL.
GO; GO:0005576; C:extracellular; IEA.
GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
GO; GO:0006955; P:immune response; IEA.
InterPro; IPR009079; 4 helix cytokine.
InterPro; IPR000779; Interleukin-2.
Pfam; PF00715; IL2; 1.
ProDom; PD003849; interleukin-2; 1.
SMART; SM00189; IL2; 1.
PROSITE; PS00424; INTERLEUKIN_2; 1.
SEQUENCE 133 AA; 14748 MW; - OD54758C130B5655 CRC64;
SEQUENCE

RA	Meib
RT	"Clo
RT	anal
RT	leis
RL	Infe
DR	EMBL
DR	HSSP
DR	GO;

RA Melby P.C., Tryon V.V., Chandrasekar B., Freeman G.L.;
RT "Cloning of Syrian hamster (Mesocricetus auratus) cytokine cDNAs and
RT analysis of cytokine mRNA expression in experimental visceral
RT leishmaniasis",
RL Infect. Immun. 66:2135-2142 (1998).
RL EMBL; AF046212; AAC40097.1; -.
DR HSP; P60568; 1IRL.
DR GO; GO:000576; C:extracellular; IEA.

DR	GO:	GO:0005134; F:interleukin-2 receptor binding; IEA.
DR	GO:	GO:0006955; P:immune response; IEA.
DR	InterPro:	IPR009079; 4 helix cytokine.
DR	InterPro:	IPR000779; Interleukin-2.
DR	Pfam:	PF00715; IL2_1.
DR	PRINTS:	PR00265; INTERLEUKIN2.
DR	ProDom:	PD003649; Interleukin-2; 1.
DR	SMART:	SM00189; IL2; 1.
DR	PROSITE:	PS00424; INTERLEUKIN_2; 1.
FT	NON_TER	1
FT	NON_TER	138 138
FT	SEQUENCE	138 AA; 15739 MW; 351032995B670779 CRC64;
Query Match		67.8%; Score 103; DB 2; Length 138;
Best Local Similarity		73.3%; Pred. No. 3e-07;
Matches	22; Conservative	2; Mismatches 6; Indels 0; Gaps 0;
QY	2 APTSSSTKKTQLQHLLLDLQMLINGINN	31
DB	14 APTSSSKKETQHLEQLLDLQELLKGINN	43
RESULT 32		
ID	IL2_RAT	
AC	PI17108; STANDARD; PRT; 155 AA.	
DT	01-AUG-1990 (Rel. 15, Created)	
DT	01-AUG-1990 (Rel. 15, Last sequence update)	
DT	05-JUL-2004 (Rel. 44, Last annotation update)	
DE	Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).	
GN	Names=Il2; Synonyms=Il-2;	
OS	Rattus norvegicus (Rat).	
OC	Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;	
OC	Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Rattus.	
OX	NCBI_TaxID=10116;	
RN	[1]	
RP	SEQUENCE FROM N.A.	
RX	MEDLINE=89339608; PubMed=2788130;	
RA	McKnight A.J.; Mason D.W.; Barclay A.N.;	
RT	"Sequence of rat interleukin 2 and anomalous binding of a mouse	
RT	interleukin 2 cDNA probe to rat MHC class II-associated invariant	
RT	chain mRNA.";	
RL	Immunogenetics 30:145-147(1989).	
CC	-I- FUNCTION: Produced by T-cells in response to antigenic or	
CC	mitogenic stimulation, this protein is required for T-cell	
CC	proliferation and other activities crucial to regulation of the	
CC	immune response. Can stimulate B cells, monocytes, lymphokine-	
CC	activated killer cells, natural killer cells, and glioma cells.	
CC	-I- SUBCELLULAR LOCATION: Secreted.	
CC	-I- SIMILARITY: Belongs to the IL-2 family.	
CC	This SWISS-PROT entry is copyright. It is produced through a collaboration	
CC	between the Swiss Institute of Bioinformatics and the EMBL outstation -	
CC	the European Bioinformatics Institute. There are no restrictions on its	
CC	use by non-profit institutions as long as its content is in no way	
CC	modified and this statement is not removed. Usage by and for commercial	
CC	entities requires a license agreement (See http://www.isb-sib.ch/announce/	
CC	or send an email to license@isb-sib.ch).	
EMBL:	M22899; AAA1427.1; -.	
DR	PIR; A45982; A31278.	
DR	HSP; P01585; IMA9.	
DR	RGD; 620047; IL2.	
DR	InterPro; IPR009079; 4 helix_cytokine.	
DR	InterPro; IPR000779; Interleukin-2.	
DR	Pfam; PF00715; IL2; 1.	
DR	PRINTS; PR00265; INTERLEUKIN2.	
DR	ProDom; PD003649; Interleukin-2; 1.	
DR	SMART; SM00189; IL2; 1.	
DR	PROSITE; PS00424; INTERLEUKIN_2; 1.	
KW	Cytokine; Glycoprotein; Growth factor; Immune response; Signal;	
FT	T-cell.	
FT	SIGNAL	
FT	1 20 By similarity.	
FT		
GO:	GO:0005134; F:interleukin-2 receptor binding; IEA.	
GO:	GO:0006955; P:immune response; IEA.	
InterPro:	IPR009079; 4 helix cytokine.	
InterPro:	IPR000779; Interleukin-2.	
Pfam:	PF00715; IL2_1.	
PRINTS:	PR00265; INTERLEUKIN2.	
ProDom:	PD003649; Interleukin-2; 1.	
SMART:	SM00189; IL2; 1.	
PROSITE:	PS00424; INTERLEUKIN_2; 1.	
NON_TER	1	
NON_TER	138 138	
SEQUENCE	138 AA; 15739 MW; 351032995B670779 CRC64;	
Query Match		67.8%; Score 103; DB 2; Length 138;
Best Local Similarity		73.3%; Pred. No. 3e-07;
Matches	22; Conservative	2; Mismatches 6; Indels 0; Gaps 0;
QY	2 APTSSSTKKTQLQHLLLDLQMLINGINN	31
DB	14 APTSSSKKETQHLEQLLDLQELLKGINN	43
RESULT 32		
ID	IL2_RAT	
AC	PI17108; STANDARD; PRT; 155 AA.	
DT	01-AUG-1990 (Rel. 15, Created)	
DT	01-AUG-1990 (Rel. 15, Last sequence update)	
DT	05-JUL-2004 (Rel. 44, Last annotation update)	
DE	Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).	
GN	Names=Il2; Synonyms=Il-2;	
OS	Rattus norvegicus (Rat).	
OC	Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;	
OC	Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Rattus.	
OX	NCBI_TaxID=10116;	
RN	[1]	
RP	SEQUENCE FROM N.A.	
RX	MEDLINE=89339608; PubMed=2788130;	
RA	McKnight A.J.; Mason D.W.; Barclay A.N.;	
RT	"Sequence of rat interleukin 2 and anomalous binding of a mouse	
RT	interleukin 2 cDNA probe to rat MHC class II-associated invariant	
RT	chain mRNA.";	
RL	Immunogenetics 30:145-147(1989).	
CC	-I- FUNCTION: Produced by T-cells in response to antigenic or	
CC	mitogenic stimulation, this protein is required for T-cell	
CC	proliferation and other activities crucial to regulation of the	
CC	immune response. Can stimulate B cells, monocytes, lymphokine-	
CC	activated killer cells, natural killer cells, and glioma cells.	
CC	-I- SUBCELLULAR LOCATION: Secreted.	
CC	-I- SIMILARITY: Belongs to the IL-2 family.	
CC	This SWISS-PROT entry is copyright. It is produced through a collaboration	
CC	between the Swiss Institute of Bioinformatics and the EMBL outstation -	
CC	the European Bioinformatics Institute. There are no restrictions on its	
CC	use by non-profit institutions as long as its content is in no way	
CC	modified and this statement is not removed. Usage by and for commercial	
CC	entities requires a license agreement (See http://www.isb-sib.ch/announce/	
CC	or send an email to license@isb-sib.ch).	
EMBL:	M22899; AAA1427.1;	

KW T-cell.
 FT SIGNAL 1 20 By similarity.
 FT CHAIN 21 154 Interleukin-2.
 FT CARBOHYD 23 23 O-linked (GalNAc...) (By similarity).
 FT DISULFID 78 126 By similarity.
 SQ SEQUENCE 154 AA; 17401 MW; F3B95E43D4A3D3E1 CRC64;

Query Match 63.2%; Score 96; DB 1; Length 154;
 Best Local Similarity 66.7%; Pred. No. 3.9e-06;
 Matches 20; Conservative 4; Mismatches 6; Indels 0; Gaps 0;

QY 2 APTSSSTKTQLEHLLDLQMLINGINN 31
 DB 21 APTSSSTKTQLEHLLDLQMLINGINN 50

RESULT 34
 IL2_MERUN STANDARD; PRT; 155 AA.
 AC Q08081;
 DT 01-OCT-1994 (Rel. 30, Created)
 DT 01-OCT-1994 (Rel. 30, Last sequence update)
 DT 05-JUL-2004 (Rel. 44, Last annotation update)
 DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
 GN Name=IL2;
 OS Meriones unguiculatus (Mongolian jird) (Mongolian gerbil).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Gerbillinae;
 OC Meriones.
 OX NCBI_TaxID=10047;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE=Spleen;
 RX MEDLINE=94174702; PubMed=8128610; DOI=10.1016/0165-2427(94)90015-9;
 RA Mai Z., Kousoulas K.G., Horohov D.W., Klei T.R.;
 RT "Cross-species PCR cloning of gerbil (Meriones unguiculatus) interleukin-2 cDNA and its expression in COS-7 cells.";
 RL Vet. Immunol. Immunopathol. 40:63-71(1994).
 CC -!- FUNCTION: Produced by T-cells in response to antigenic or mitogenic stimulation, this protein is required for T-cell proliferation and other activities crucial to regulation of the immune response. Can stimulate B cells, monocytes, lymphokine-activated killer cells, natural killer cells, and glioma cells.
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- SIMILARITY: Belongs to the IL-2 family.

 CC This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See <http://www.isb-sib.ch/announce/> or send an email to license@isb-sib.ch).

DR EMBL; X68779; CAA48679.1; -.
 DR PIR; S33509; S33509.
 DR HSSP; P01585; IMA9.
 DR InterPro; IPR009079; 4_helix_cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 KW Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
 T-cell.
 FT SIGNAL 1 20 By similarity.
 FT CHAIN 21 155 Interleukin-2.
 FT CARBOHYD 23 23 O-linked (GalNAc...) (By similarity).
 FT DISULFID 78 126 By similarity.
 SQ SEQUENCE 155 AA; 17602 MW; D0F74AA1A381CDDA CRC64;

Query Match 62.5%; Score 95; DB 1; Length 155;

Best Local Similarity 66.7%; Pred. No. 5.5e-06;
 Matches 20; Conservative 2; Mismatches 8; Indels 0; Gaps 0;

QY 2 APTSSSTKTQLEHLLDLQMLINGINN 31
 DB 21 APTSSPAKEAQYLEQLLDLQQLLRGINN 50

RESULT 35
 Q865X2 PRELIMINARY; PRT; 154 AA.
 AC Q865X2;
 DT 01-JUN-2003 (TREMELrel. 24, Created)
 DT 01-JUN-2003 (TREMELrel. 24, Last sequence update)
 DT 01-MAR-2004 (TREMELrel. 26, Last annotation update)
 DE Interleukin 2.
 GN Name=IL-2;
 OS Lama glama (Llama).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Tylopoda; Camelidae; Lama.
 OX NCBI_TaxID=9844;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Raadan O., Lee S.-., Yoshida R., Chang K.-., Ohashi K., Sugimoto C., Onuma M.;
 RL Submitted (APR-2003) to the EMBL/GenBank/DBJ databases.
 DR EMBL; AB107651; BAC75388.1; -.
 DR HSSP; F60368; IIRL.
 DR GO; GO:0005576; C:extracellular; IEA.
 DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
 DR GO; GO:0006955; P:immune response; IEA.
 DR InterPro; IPR009079; 4_helix_cytokine.
 DR InterPro; IPR000779; Interleukin-2.
 DR Pfam; PF00715; IL2; 1.
 DR PRINTS; PR00265; INTERLEUKIN2.
 DR ProDom; PD003649; Interleukin-2; 1.
 DR SMART; SM00189; IL2; 1.
 DR PROSITE; PS00424; INTERLEUKIN_2; 1.
 SQ SEQUENCE 154 AA; 17652 MW; 8020EC8DBB7BBA38 CRC64;

Query Match 61.2%; Score 93; DB 2; Length 154;
 Best Local Similarity 66.7%; Pred. No. 1.1e-05;
 Matches 20; Conservative 3; Mismatches 7; Indels 0; Gaps 0;

QY 2 APTSSSTKTQLEHLLDLQMLINGINN 31
 DB 21 APTLSSTKTKQLEPLLDLQFLLRKYN 50

RESULT 36
 IL2_HORSE STANDARD; PRT; 149 AA.
 AC P37997;
 DT 01-OCT-1994 (Rel. 30, Created)
 DT 01-NOV-1995 (Rel. 32, Last sequence update)
 DT 05-JUL-2004 (Rel. 44, Last annotation update)
 DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF).
 GN Name=IL2;
 OS Equus caballus (Horse).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Perissodactyla; Equidae; Equus.
 OX NCBI_TaxID=9796;
 RN [1]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=94160538; PubMed=8116217; DOI=10.1016/0165-2427(93)90070-K;
 RA Vandergriff E.V., Horohov D.W.;
 RT "Molecular cloning and expression of equine interleukin 2.";
 RL Vet. Immunol. Immunopathol. 39:395-406(1993).
 RN [2]
 RP SEQUENCE FROM N.A.
 RA Tavernor A.S., Allen W.R., Butcher G.W.;
 RL Submitted (NOV-1992) to the EMBL/GenBank/DBJ databases.
 CC -!- FUNCTION: Produced by T-cells in response to antigenic or

CC mitogenic stimulation, this protein is required for T-cell
 CC proliferation and activates crucial to regulation of the
 CC immune response. Can stimulate B cells, monocytes, lymphokine-
 CC activated killer cells, natural killer cells, and glioma cells.
 CC -1- SUBCELLULAR LOCATION: Secreted.
 CC -1- SIMILARITY: Belongs to the IL-2 family.
 CC -----
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use by non-profit institutions as long as its content is in no way
 CC modified and this statement is not removed. Usage by and for commercial
 CC entities requires a license agreement (See <http://www.isb-sib.ch/announce/>
 CC or send an email to license@isb-sib.ch).
 CC -----
 CC EMBL; L06009; AA20134.1; -;
 CC EMBL; X69393; CA49190.1; -;
 CC PIR; S31391; S31391.
 CC HSSP; P01585; 1M47.
 CC InterPro; IPR009079; 4 helix cytokine.
 CC InterPro; IPR000779; Interleukin-2.
 CC Pfam; PF00715; IL2; 1.
 CC PRINTS; PR00285; INTERLEUKIN2.
 CC ProDom; PD003649; Interleukin-2; 1.
 CC SMART; SM00189; IL2; 1.
 CC PROSITE; PS00424; INTERLEUKIN 2; 1.
 CC Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
 KW T-cell.
 FT SIGNAL 1 20 By similarity.
 FT CHAIN 21 149 Interleukin-2.
 FT DISULFID 78 121 By similarity.
 FT CARBOHYD 23 23 O-linked (GalNAc . .) (By similarity).
 FT CARBOHYD 106 106 N-linked (GlcNAc . .) (Potential).
 FT CONFLICT 3 3 R -> K (in Ref. 2).
 FT CONFLICT 8 8 S -> A (in Ref. 2).
 FT CONFLICT 59 59 I -> M (in Ref. 2).
 FT CONFLICT 125 125 N -> D (in Ref. 2).
 FT CONFLICT 128 128 E -> G (in Ref. 2).
 FT CONFLICT 145 145 I -> F (in Ref. 2).
 FT CONFLICT 148 148 L -> M (in Ref. 2).
 FT CONFLICT 149 AA; 17086 MW; 051B8C47A0114FC CRC64;
 SQ SEQUENCE 149 AA; 17086 MW; 051B8C47A0114FC CRC64;
 Query Match 60.5%; Score 92; DB 1; Length 149;
 Best Local Similarity 56.7%; Pred. No. 1.5e-05;
 Matches 17; Conservative 8; Mismatches 5; Indels 0; Gaps 0;
 QY 2 APTSSSTKTKQLQLEHLLDLQMLNGINN 31
 DB 21 APTSSSKRTQQLKQLQMDLKLLEGVNN 50
 RESULT 37
 QYUCF5 PRELIMINARY; PRT; 23 AA.
 AC Q9UCF5;
 DT 01-WAY-2000 (TrEMBLrel. 13, Created)
 DT 01-WAY-2000 (TrEMBLrel. 13, Last sequence update)
 DT 01-JUN-2000 (TrEMBLrel. 14, Last annotation update)
 DE Interleukin 2 (Fragment).
 OS Homo sapiens (Human).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
 OX NCBI_TaxID=9606;
 RN [1]
 SEQUENCE.
 RP MEDLINE=93289963; PubMed=8512072; DOI=10.1006/abio.1993.1209;
 RA Mullner S., Karbe-Thonges B., Tripler D.;
 RT "Charge heterogeneity of insulin fusion proteins expressed in
 RT Escherichia coli is due to proteolytic degradation.";
 RL Anal. Biochem. 210:366-373(1993).
 SQ SEQUENCE 23 AA; 2637 MW; 40B64C6875C5021F CRC64;
 Query Match 59.9%; Score 91; DB 2; Length 23;

Best Local Similarity 90.5%; Pred. No. 2.6e-06;
 Matches 19; Conservative 0; Mismatches 2; Indels 0; Gaps 0;
 QY 4 TSSSTKTKQLQLEHLLDLQML 24
 DB 3 TSXSTKTKQLQLEHLLDLQML 23
 RESULT 38
 IL2_ORCOR
 ID IL2_ORCOR STANDARD; PRT; 152 AA.
 AC O97513;
 DT 30-MAY-2000 (Rel. 39, Created)
 DT 30-MAY-2000 (Rel. 39, Last sequence update)
 DT 05-JUL-2004 (Rel. 44, Last annotation update)
 DE Interleukin-2 precursor (IL-2) (T-cell growth factor) (TCGF)
 DE (Fragment).
 DE Name=IL2;
 OS Orcinus orca (Killer whale).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Cetacea; Odontoceti; Delphinidae;
 OC Orcinus.
 OX NCBI_TaxID=9733;
 RN [1]
 SEQUENCE FROM N.A.
 RA Ness T.L., Bradley W.G., Reynolds J.E. III, Roess W.B.;
 RT "Isolation and expression of the interleukin-2 gene from the killer
 RT whale, Orcinus orca.";
 RL Mar. Mamm. Sci. 14:531-543(1998).
 CC -1- FUNCTION: Produced by T-cells in response to antigenic or
 CC mitogenic stimulation, this protein is required for T-cell
 CC proliferation and other activities crucial to regulation of the
 CC immune response. Can stimulate B cells, monocytes, lymphokine-
 CC activated killer cells, natural killer cells, and glioma cells (By
 CC similarity).
 CC -1- SUBCELLULAR LOCATION: Secreted.
 CC -1- SIMILARITY: Belongs to the IL-2 family.
 CC -----
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use by non-profit institutions as long as its content is in no way
 CC modified and this statement is not removed. Usage by and for commercial
 CC entities requires a license agreement (See <http://www.isb-sib.ch/announce/>
 CC or send an email to license@isb-sib.ch).
 CC -----
 CC EMBL; AF009570; AAD01426.1; -;
 CC HSSP; P01585; 1M49.
 CC InterPro; IPR009079; 4 helix cytokine.
 CC InterPro; IPR000779; Interleukin-2.
 CC Pfam; PF00715; IL2; 1.
 CC PRINTS; PR00265; INTERLEUKIN2.
 CC ProDom; PD003649; Interleukin-2; 1.
 CC SMART; SM00189; IL2; 1.
 CC PROSITE; PS00424; INTERLEUKIN 2; 1.
 CC Cytokine; Glycoprotein; Growth factor; Immune response; Signal;
 KW T-cell.
 FT SIGNAL 1 20 By similarity.
 FT CHAIN 21 >152 Interleukin-2.
 FT CARBOHYD 23 23 O-linked (GalNAc . .) (By similarity).
 FT DISULFID 78 126 By similarity.
 FT NON_TER 152 152
 SQ SEQUENCE 152 AA; 17424 MW; 308F91821ECCB764 CRC64;
 Query Match 57.9%; Score 88; DB 1; Length 152;
 Best Local Similarity 60.0%; Pred. No. 6e-05;
 Matches 18; Conservative 6; Mismatches 6; Indels 0; Gaps 0;
 QY 2 APTSSSTKTKQLQLEHLLDLQMLNGINN 31
 DB 21 APTSSSTKTKQVQLQQLQLLEKINN 50

RESULT 39

Q71V48
ID Q71V48 PRELIMINARY; PRT; 38 AA.
AC Q71V48;
DT 05-JUL-2004 (TrEMBLrel. 27, Created)
DT 05-JUL-2004 (TrEMBLrel. 27, Last sequence update)
DT 05-JUL-2004 (TrEMBLrel. 27, Last annotation update)
DE Interleukin-2 (Fragment).
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RA Turner D.M., Sinnott P.J., Hutchinson I.V.;
RL Submitted (OCT-1997) to the EMBL/GenBank/DBJ databases.
DR EMBL; AF031845; AAB86861.1; -;
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF0715; IL2; 1.
DR ProDom; PD003649; Interleukin-2; 1.
FT NON_TER 38 38
SQ SEQUENCE 38 AA; 4192 MW; 8DE4AE5344C2CBA3 CRC64;

Query Match 57.2%; Score 87; DB 2; Length 38;
Best Local Similarity 100.0%; Pred. No. 1.8e-05;
Matches 18; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 APTSSSTKKTQLQLEHLL 19
DB 21 APTSSSTKKTQLQLEHLL 38
|||||

RESULT 40

Q9XT84
ID Q9XT84 PRELIMINARY; PRT; 154 AA.
AC Q9XT84;
DT 01-NOV-1999 (TrEMBLrel. 12, Created)
DT 01-NOV-1999 (TrEMBLrel. 12, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Interleukin 2.
OS Delphinapterus leucas (Beluga whale).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Cetacea; Odontoceti;
OC Monodontidae; Delphinapterus.
OX NCBI_TaxID=9749;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=99221046; PubMed=10206205; DOI=10.1016/S0165-2427(99)00009-4;
RA St-Laurent G., Beliveau C., Archambault D.;
RT "Molecular cloning and phylogenetic analysis of beluga whale
RT (Delphinapterus leucas) and grey seal (Halichoerus grypus) interleukin
RT 2.";
RL Vet. Immunol. Immunopathol. 67:385-394(1999).
DR EMBL; AF072870; AAD40847.1; -;
DR HSP; P60568; IIRL.
DR GO; GO:0005576; C:extracellular; IEA.
DR GO; GO:0005134; F:interleukin-2 receptor binding; IEA.
DR GO; GO:0006955; P:immune response; IEA.
DR InterPro; IPR009079; 4_helix_cytokine.
DR InterPro; IPR000779; Interleukin-2.
DR Pfam; PF0715; IL2; 1.
DR PRINTS; PR00265; INTERLEUKIN2.
DR ProDom; PD003649; Interleukin-2; 1.
DR SMART; SM00189; IL2; 1.
DR PROSITE; PS00424; INTERLEUKIN 2; 1.
SQ SEQUENCE 154 AA; 17652 MW; 4288D3D41D04F172 CRC64;

Query Match 54.6%; Score 83; DB 2; Length 154;
Best Local Similarity 56.7%; Pred. No. 0.00034;
Matches 17; Conservative 6; Mismatches 7; Indels 0; Gaps 0;

QY 2 APTSSSTKKTQLQLEHLLDQLQILGINN 31
DB 21 APTSSSTENTKKQVQSLLODLHLLKEINN 50
|||||

Search completed: September 23, 2005, 12:48:03
Job time : 55.8525 secs

This Page Blank (uspto)

GenCore version 5.1.6
Copyright (c) 1993 - 2005 CompuGen Ltd.

OM protein - protein search, using sw model

Run on: September 23, 2005, 12:40:19 ; Search time 24.3934 Seconds
(without alignments)
122.275 Million cell updates/sec

Title: US-10-727-514-2

Perfect score: 152
Sequence: 1 MPTSSSTKTKQLQLHLLDLQMLNGINN 31

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283416 seqs, 96216763 residues

Total number of hits satisfying chosen parameters: 283416

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 100 summaries

Database : PIR 79:*

1: piri:.*
2: piri2:.*
3: piri3:.*
4: piri4:.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	147	96.7	153	1 ICHU2	interleukin-2 prec
2	147	96.7	153	1 ICHU2	interleukin-2 prec
3	114	75.0	154	2 JN0698	interleukin-2 prec
4	97	63.8	155	2 A31278	interleukin-2 prec
5	96	63.2	154	2 S16241	interleukin-2 prec
6	95	62.5	155	2 S33509	interleukin-2 - Mo
7	92	60.5	149	2 S31391	interleukin-2 prec
8	79	52.0	155	2 I45913	interleukin-2 prec
9	79	52.0	155	2 S38662	interleukin-2 - go
10	79	52.0	155	2 S11488	interleukin-2 prec
11	69	45.4	169	2 S37289	interleukin-2 prec
12	64	42.1	169	1 ICMS2	interleukin-2 prec
13	59.5	39.1	60	2 I68870	interleukin-2 - we
14	58.5	38.5	62	2 I54512	interleukin-2 - mo
15	57.5	37.8	72	2 I68871	interleukin-2 - mo
16	54	35.5	357	2 S12169	isopenicillin N ac
17	52	34.2	155	1 F64145	hypothetical prote
18	52	34.2	737	2 G82262	probable exopolysa
19	51	33.6	304	2 P95285	probable LysR-type
20	51	33.6	627	2 E70122	flagellar hook-aa
21	50	32.9	365	2 C70701	hypothetical prote
22	49	32.2	230	2 H82447	DNA-binding respon
23	49	32.2	543	2 S82217	methyl-accepting c
24	49	32.2	1130	2 A89130	protein F52E1.4 [i
25	48.5	31.9	240	2 T22210	hypothetical prote
26	48	31.6	189	2 H64307	hypothetical prote
27	48	31.6	441	2 AB1367	aminopeptidase C {
28	48	31.6	441	2 AB1736	aminopeptidase C {
29	48	31.6	595	2 JC8012	G protein-coupled

HIV-1 retropepsin
hypothetical prote
polymorphic outer
polymorphic membra
conserved hypochet
hypothetical prote
SEC14 protein homo
nonmuscle myosin I
hypothetical prote
hypothetical prote
amino acid specifi
hypothetical prote
hypothetical prote
galactokinase (EC
oligopeptide ABC t
peptide ABC transp
hypothetical prote
hypothetical prote
hypothetical prote
homeotic protein p
DNA (cytosine-5)-
hypothetical prote
hypothetical prote
DNA polymerase III
probable DNA-direc
hypothetical prote
85C protein - Myco
hypothetical prote
probable peptide A
ATP-dependent memb
pol polyprotein -
pol polyprotein -
conserved hypochet
dynam-in-related pr
dynam-in-related pr
hypothetical prote
hypothetical prote
dopamine receptor
2-5A-dependent RNA
probable acyltrans
hypothetical prote
flagellin family p
hypothetical prote
two-component hybr
cinnamyl-alcohol d
cinnamyl-alcohol d
nuclear retroviral
3-isopropylmalate
hypothetical prote
phenylalanyl-cRNA
hypothetical cell
cofi intron protei
F20p23.3 protein -
hypothetical prote
probable integral
probable integral
F22b7.5 protein -
pol polyprotein -
acriflavin resista
multidrug efflux p
transcription fact
zinc finger protei
chromosome segrega
exodeoxyribonuclea
hypothetical prote
pregnancy zone pro
hypothetical prote
hypothetical prote

1061 1 GNLJG4
244 2 T11685
938 2 F86548
938 2 H72074
938 2 F80209
557 2 F89839
1008 2 T41244
1964 2 A59282
159 2 T05656
211 2 C84888
466 2 E90228
293 2 A71946
323 2 H90434
380 1 C37760
516 2 B64551
571 2 H82355
614 2 T18745
627 2 S46820
692 2 T32980
715 2 G86634
1403 2 S24548
1612 2 JC5210
307 2 T46103
325 2 F81159
328 2 C81945
333 2 AC2415
333 2 S32114
333 2 C83779
530 2 C82442
715 2 B43943
752 2 D40899
870 1 GNMVJA
895 2 F75608
903 2 JE0327
903 2 T50334
359 2 T22950
511 2 S44275
741 2 A45771
269 2 G91169
273 2 G86015
283 2 B97167
288 2 B89930
324 2 A97036
347 2 A12010
357 2 S23526
357 2 S23525
365 2 JC7527
368 2 T46607
415 2 B85436
474 2 B69494
487 2 A11146
581 2 S09140
585 2 T19814
594 2 A86309
628 2 B91146
628 2 F85991
943 2 S44636
1019 2 T11560
1034 2 D85119
1050 2 AE0380
1182 2 T30189
1187 2 T46637
1188 2 T46608
1208 2 A19147
1245 2 E83110
1352 2 G84473
1482 2 S13495
115 2 D97846
200 2 F84080

30 48 31.6
31 47.5 31.2
32 47.5 31.2
33 47.5 31.2
34 47 30.9
35 47 30.9
36 47 30.9
37 47 30.9
38 46.5 30.6
39 46.5 30.6
40 46.5 30.6
41 46 30.3
42 46 30.3
43 46 30.3
44 46 30.3
45 46 30.3
46 46 30.3
47 46 30.3
48 46 30.3
49 46 30.3
50 46 30.3
51 46 30.3
52 46 30.3
53 45 29.6
54 45 29.6
55 45 29.6
56 45 29.6
57 45 29.6
58 45 29.6
59 45 29.6
60 45 29.6
61 45 29.6
62 45 29.6
63 45 29.6
64 45 29.6
65 45 29.6
66 44.5 29.3
67 44.5 29.3
68 44.5 29.3
69 44.5 29.3
70 44 28.9
71 44 28.9
72 44 28.9
73 44 28.9
74 44 28.9
75 44 28.9
76 44 28.9
77 44 28.9
78 44 28.9
79 44 28.9
80 44 28.9
81 44 28.9
82 44 28.9
83 44 28.9
84 44 28.9
85 44 28.9
86 44 28.9
87 44 28.9
88 44 28.9
89 44 28.9
90 44 28.9
91 44 28.9
92 44 28.9
93 44 28.9
94 44 28.9
95 44 28.9
96 44 28.9
97 44 28.9
98 44 28.9
99 43.5 28.6
100 43.5 28.6

ALIGNMENTS

RESULT 1

ICG12
interleukin-2 precursor - common gibbon
N:Alternate names: IL-2; T-cell growth factor
C:Species: Hylobates lar [common gibbon, white-handed gibbon]
C>Date: 31-Dec-1991 #sequence_revision 31-Dec-1991 #text_change 09-Jul-2004
C:Accession: A94067; A01849
R:Chen, S.J.; Holbrook, N.J.; Mitchell, K.F.; Vallone, C.A.; Greengard, J.S.; Crabtree, Proc. Natl. Acad. Sci. U.S.A. 82, 7284-7286, 1985
A:Title: A viral long terminal repeat in the interleukin 2 gene of a cell line that contains a long terminal repeat
A:Reference number: A94067; MUID:86042650; PMID:3877307
A:Accession: A94067
A:Molecule type: mRNA
A:Residues: 1-153 <CH>
A:Cross-references: UNIPROT:P60569; GB:M11144; NID:G177014; PIDN:AAA35454.1; PID:G177015
A:Experimental source: leukemia cell line MLA 144; ATCC TIB 201
A>Note: the integration of a retrovirus sequence containing a 5' LTR into the 3' noncoding region of the interleukin-2 gene
C:Superfamily: interleukin-2
C:Keywords: cytokine; glycoprotein; growth factor; immunoregulation; lymphokine; T-cell
F1-20/Domain: signal sequence #status predicted <SIG>
F21-153/Product: interleukin-2 #status predicted <IL2>
F23/Binding site: carbohydrate (Thr) (covalent) #status predicted
F:78-125/Disulfide bonds: #status predicted

Query Match 96.7%; Score 147; DB 1; Length 153;
Best Local Similarity 100.0%; Pred. No. 3.4e-14;
Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 APTSSSTKTKTQLEHLHLDLQWLINGINN 31

Db 21 APTSSSTKTKTQLEHLHLDLQWLINGINN 50

RESULT 2

ICHU2

interleukin-2 precursor [validated] - human
N:Alternate names: IL-2; T-cell growth factor
C:Species: Homo sapiens (man)
C>Date: 11-Aug-1983 #sequence_revision 11-Aug-1983 #text_change 09-Jul-2004
R:Holbrook, N.J.; Lieber, M.; Crabtree, G.R.
Nucleic Acids Res. 12, 5005-5013, 1984
A:Title: DNA sequence of the 5' flanking region of the human interleukin 2 gene: homologous to the DNA sequence of the 5' flanking region of the human interleukin 2 gene
A:Reference number: A93524; MUID:84247353; PMID:6330695
A:Accession: A01849
A:Molecule type: DNA
A:Residues: 1-153 <HOL>
A:Cross-references: UNIPROT:P60568; GB:X00695; GB:X00200; GB:X00201; GB:X00202; NID:G337
R:Fujita, T.; Takaoka, C.; Matsui, H.; Taniguchi, T.
Proc. Natl. Acad. Sci. U.S.A. 80, 7437-7441, 1983
A:Title: Structure of the human interleukin 2 gene.
A:Reference number: A21192; MUID:84170243; PMID:6324170
A:Accession: A21192
A:Molecule type: DNA
A:Residues: 1-153 <FUJ>
A:Cross-references: NID:G186294; PIDN:AAD48509.1; PID:G5729676
R:Holbrook, N.J.; Smith, K.A.; Fornace Jr., A.J.; Comeau, C.M.; Wiskocil, R.L.; Crabtree, Proc. Natl. Acad. Sci. U.S.A. 81, 1634-1638, 1984
A:Title: T-cell growth factor: complete nucleotide sequence and organization of the gene
A:Reference number: A20961; MUID:84170356; PMID:6608729
A:Accession: A20961
A:Molecule type: DNA
A:Residues: 1-153 <HO>
A:Cross-references: GB:K02056; NID:G186302; PIDN:AAA98792.1; PID:G386819
R:Laabi, Y.; Gras, M.P.; Carbonnel, F.; Brouet, J.C.; Berger, R.; Larsen, C.J.; Tsapis, EMBO J. 11, 3897-3904, 1992
A:Title: A new gene, BCM, on chromosome 16 is fused to the interleukin 2 gene by a t(4;16) translocation
A:Reference number: S31208; MUID:93010984; PMID:1396583
A:Accession: S31209
A:Molecule type: mRNA

A:Residues: 11-117 <LAA>
A:Cross-references: EMBL:Z14955

A>Note: This sequence is shown from the beginning of the fragment to the chromosomal break
R:Taniguchi, T.; Matsui, H.; Fujita, T.; Takaoka, C.; Kashima, N.; Yoshimoto, R.; Hamuro Nature 302, 305-310, 1983

A:Title: Structure and expression of a cloned cDNA for human interleukin-2.
A:Reference number: A93297; MUID:83167472; PMID:6403867

A:Accession: A93297

A:Molecule type: mRNA

A:Residues: 1-153 <TAN>

A:Cross-references: GB:V00564; NID:G33780; PIDN:CAA23827.1; PID:G333781

A:Experimental source: leukemic T-cell line, Jurkat-111, cloned from Jurkat-FHCR

R:Maeda, S.; Nishino, N.; Obaru, K.; Mita, S.; Nomiya, H.; Shimada, K.; Fujimoto, K.; Biochem. Biophys. Res. Commun. 115, 1040-1047, 1983

A:Title: Cloning of interleukin 2 mRNAs from human tonsils.

A:Reference number: A90113; MUID:84023840; PMID:6312994

A:Accession: A90113

A:Molecule type: mRNA

A:Residues: 1-153 <MA>

A:Cross-references: GB:J00264; NID:G186294; PIDN:AAD48509.1; PID:G5729676

A:Experimental source: tonsillar mononuclear cells

R:Devos, R.; Plaetinck, G.; Cheroutre, H.; Simons, G.; Degraeve, W.; Tavernier, J.; Renauld Nucleic Acids Res. 11, 4307-4323, 1983

A:Title: Molecular cloning of human interleukin 2 cDNA and its expression in Escherichia coli

A:Reference number: A93478; MUID:83246551; PMID:6306584

A:Accession: A93478

A:Molecule type: mRNA

A:Residues: 1-153 <DEV>

A:Cross-references: GB:V00564; NID:G33780; PIDN:CAA23827.1; PID:G333781

A:Experimental source: splenocytes

R:Eisenberg, O.; Faber-Elman, A.; Lotan, M.; Schwartz, M.

J. Neurochem. 64, 1928-1936, 1995

A:Title: Interleukin-2 transcripts in human and rodent brains: possible expression by as

A:Reference number: I56518; MUID:95239150; PMID:7722480

A:Accession: I56518

A:Molecule type: mRNA

A:Status: translated from GB/EMBL/DBJ

A:Residues: 1-152 <EIZ>

A:Cross-references: GB:S77834; NID:G999000

A:Accession: I73624

A:Molecule type: mRNA

A:Status: preliminary; translated from GB/EMBL/DBJ

A:Residues: 5-7, 'P', 9-17, 'P', 19-32, 'X', 34-45, 'X', 47-143 <RES>

A:Cross-references: GB:S77835; NID:G999001; PIDN:AAD14264.1; PID:G4261964

R:Nishino, N.; Obaru, K.; Maeda, S.; Shimada, K.; Onoue, K.

Biomed. Res. 6, 197-205, 1985

A:Title: Organization of the DNA regions flanking the human interleukin 2 gene.

A:Reference number: I52528

A:Accession: I52528

A:Status: translated from GB/EMBL/DBJ

A:Molecule type: DNA

A:Residues: 1-68 <RE2>

A:Cross-references: GB:M33199; NID:G186296; PIDN:AAA59139.1; PID:G553508

R:Siebenlist, U.; Durand, D.B.; Bressler, P.; Holbrook, N.J.; Norris, C.A.; Kamoun, M.; Mol. Cell. Biol. 6, 3042-3049, 1986

A:Title: Promoter region of interleukin-2 gene undergoes chromatin structure changes and

A:Reference number: I57603; MUID:87064618; PMID:3491296

A:Accession: I57603

A:Status: translated from GB/EMBL/DBJ

A:Molecule type: DNA

A:Residues: 1-68 <RE3>

A:Cross-references: GB:M13879; NID:G186305; PIDN:AAA59141.1; PID:G553509

R:Weir, M.P.; Chaplin, M.A.; Wallace, D.M.; Dykes, C.W.; Hobden, A.N. Biochemistry 27, 6883-6892, 1988

A:Title: Structure-activity relationships of recombinant human interleukin 2.

A:Reference number: I52401; MUID:89062420; PMID:3264184

A:Accession: I52401

A:Status: translated from GB/EMBL/DBJ

A:Molecule type: DNA

A:Residues: 'M', 21-153 <RE4>

A:Cross-references: GB:M22005; NID:G186300; PIDN:AAA59140.1; PID:G386818

A>Note: mutation of Phe-42 to Ala reduced binding to the IL-2 receptor 5-10 fold without

R;Robb, R.J.; Kutny, R.M.; Panico, M.; Morris, H.R.; Chowdhry, V.
Proc. Natl. Acad. Sci. U.S.A. 81, 6486-6490, 1984
A;Title: Amino acid sequence and post-translational modification of human interleukin 2.
A;Reference number: A94009; MUID:85038540; PMID:6333564
A;Accession: A94009
A;Molecule type: protein
A;Residues: 21-153 <ROB>
A;Note: disulfide bonds and carbohydrate binding site were determined
A;Note: heterogeneity in Jurkat-derived IL-2 is primarily due to differences in glycosylation in lacking 21-Ala (Ft-IL2-A and Ft-IL2-B) and 22-Pro (Ft-IL2-B)
R;Conradt, H.S.; Nintz, M.; Dittmar, K.E.J.; Lindenmaier, W.; Hoppe, J.; Hauser, H.
J. Biol. Chem. 264, 17368-17373, 1989
A;Title: Expression of human interleukin-2 in recombinant baby hamster kidney, Ltk-, and de.
A;Reference number: A34463; MUID:90008901; PMID:2793860
A;Accession: A34463
A;Molecule type: protein
A;Residues: 21-35 <CON>
A;Note: the O-linked glycosylation site in recombinant material matched that from human R;Grabenhorst, E.; Hofer, B.; Nintz, M.; Jaeger, V.; Conradt, H.S.
Eur. J. Biochem. 215, 189-197, 1993
A;Title: Biosynthesis and secretion of human interleukin 2 glycoproteins variants from B
A;Reference number: S34052; MUID:93345493; PMID:8344280
A;Contents: annotation; glycosylation of variant forms expressed in insect cells
C;Genetics:
A;Gene: GDB:IL2
A;Cross-references: GDB:119344; OMIM:147680
A;Map position: 4q26-q27
A;Introns: 49/3; 69/3; 117/3
C;Superfamily: interleukin-2
C;Keywords: cytokine; glycoprotein; growth factor; immunoregulation; lymphokine; T-cell
F;1-20/Domain: signal sequence #status predicted <SIG>
F;21-153/Product: interleukin-2 #status experimental <IL2>
F;23/Binding site: carbohydrate (Thr) (covalent) #status experimental
F;78-125/Disulfide bonds: #status experimental
Query Match 96.7%; Score 147; DB 1; Length 153;
Best Local Similarity 100.0%; Pred. No. 3.4e-14;
Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 2 APTSSSTKTQQLQLEHLLDLQMLNGINN 31
DB 21 APTSSSTKTQQLQLEHLLDLQMLNGINN 50
RESULT 3
JN0698
interleukin 2 precursor - cat
C;Species: Felis silvestris catus (domestic cat)
C;Date: 03-Feb-1994 #sequence_revision 03-Feb-1994 #text_change 09-Jul-2004
C;Accession: JN0698
R;Cozzi, P.J.; Padrid, P.A.; Takeda, J.; Alegre, M.L.; Yuhki, N.; Leff, A.R.
Biochem. Biophys. Res. Commun. 194, 1038-1043, 1993
A;Title: Sequence and functional characterization of feline interleukin 2.
A;Reference number: JN0698; MUID:93356765; PMID:8352761
A;Accession: JN0698
A;Status: nucleic acid sequence not shown
A;Molecule type: mRNA
A;Residues: 1-154 <COZ>
A;Cross-references: UNIPROT:Q07885; GB:U19402; NID:G304313; PIDN:AAA02865.1; PID:G304314
C;Superfamily: interleukin-2
C;Keywords: growth factor

Query Match 75.0%; Score 114; DB 2; Length 154;
Best Local Similarity 73.3%; Pred. No. 2.4e-09;
Matches 22; Conservative 5; Mismatches 3; Indels 0; Gaps 0;
QY 2 APTSSSTKTQQLQLEHLLDLQMLNGINN 31
DB 21 APASSSTKTQOQLLEHLLDLQMLNGINN 50
RESULT 4

A31278
interleukin-2 precursor - rat
N;Alternate names: IL-2; T-cell growth factor
C;Species: Rattus norvegicus (Norway rat)
C;Date: 26-Apr-1989 #sequence_revision 26-Apr-1989 #text_change 09-Jul-2004
C;Accession: A45882; A31278
R;McKnight, A.J.; Mason, D.W.; Barclay, A.N.
Immunogenetics 30, 145-147, 1989
A;Title: Sequence of rat interleukin 2 and anomalous binding of a mouse interleukin 2 c
A;Reference number: A45882; MUID:89339608; PMID:2788130
A;Accession: A45882
A;Status: preliminary
A;Molecule type: mRNA
A;Residues: 1-155 <MC>
A;Cross-references: UNIPROT:P17108; GB:M22899; NID:G204909; PIDN:AAA1427.1; PID:G204910
C;Superfamily: interleukin-2
C;Keywords: cytokine; glycoprotein; growth factor; immunoregulation; T-cell
Query Match 63.8%; Score 97; DB 2; Length 155;
Best Local Similarity 66.7%; Pred. No. 7.7e-07;
Matches 20; Conservative 4; Mismatches 6; Indels 0; Gaps 0;
QY 2 APTSSSTKTQQLQLEHLLDLQMLNGINN 31
DB 21 APTSSSTKTQOQLLEHLLDLQMLNGINN 50
RESULT 5
S16241
interleukin-2 precursor - pig
N;Alternate names: IL-2; T-cell growth factor
C;Species: Sus scrofa domestica (domestic pig)
C;Date: 30-Jun-1992 #sequence_revision 30-Jun-1992 #text_change 09-Jul-2004
C;Accession: S16241; S15473
R;Goodall, J.C.; Emery, D.C.; Bailey, M.; English, L.S.; Hall, L.
Biochim. Biophys. Acta 1089, 257-258, 1991
A;Title: cDNA cloning of porcine interleukin 2 by polymerase chain reaction.
A;Reference number: S16241; MUID:91274360; PMID:2054386
A;Accession: S16241
A;Molecule type: mRNA
A;Residues: 1-154 <GOO>
A;Cross-references: UNIPROT:P26891; EMBL:X56750; NID:G1991; PIDN:CAA40071.1; PID:G1992
R;Lefevre, F.
submitted to the EMBL Data Library, March 1991
A;Description: Molecular cloning of porcine interleukin 2 cDNA by the polymerase chain
A;Reference number: S15473
A;Accession: S15473
A;Molecule type: mRNA
A;Residues: 1-154 <LEF>
A;Cross-references: EMBL:X58428; NID:G2068; PIDN:CAA41330.1; PID:G2069
C;Superfamily: interleukin-2
C;Keywords: cytokine; glycoprotein; growth factor; immunoregulation; T-cell
F;1-20/Domain: signal sequence #status predicted <SIG>
F;21-154/Product: interleukin-2 #status predicted <MAT>
Query Match 63.2%; Score 96; DB 2; Length 154;
Best Local Similarity 66.7%; Pred. No. 1.1e-06;
Matches 20; Conservative 4; Mismatches 6; Indels 0; Gaps 0;
QY 2 APTSSSTKTQQLQLEHLLDLQMLNGINN 31
DB 21 APTSSSTKTQOQLLEHLLDLQMLNGINN 50
RESULT 6
S33509
interleukin-2 - Mongolian jird
C;Species: Meriones unguiculatus (Mongolian jird)
C;Date: 06-Jan-1995 #sequence_revision 06-Jan-1995 #text_change 09-Jul-2004
C;Accession: S33509
R;Mai, Z.; Klei, T.; Horohov, D.
submitted to the EMBL Data Library, October 1992
A;Description: Cross-species PCR cloning of Jird (Meriones unguiculatus) interleukin-2

A;Reference number: S33509
 A;Accession: S33509
 A;Status: preliminary
 A;Molecule type: mRNA
 A;Residues: 1-155 <MAL>
 A;Cross-references: UNIPROT:Q08081; EMBL:X68779; NID:g577588; PIDN:CAA48679.1; PID:g3116
 C;Superfamily: interleukin-2

Query Match 62.5%; Score 95; DB 2; Length 155;
 Best Local Similarity 66.7%; Pred. No. 1.5e-06;
 Matches 20; Conservative 2; Mismatches 8; Indels 0; Gaps 0;

QY 2 APTSSSTKKTQQLQLEHLLDLQMLINGINN 31
 ||||| | : ||||| : |||||
 Db 21 APTSSPAKAAQYLKQLLLDLQLLGGINN 50
 ||||| | : ||||| : |||||

RESULT 7
 S31391
 interleukin-2 precursor - horse
 C;Species: Equus caballus (domestic horse)
 C;Date: 13-Jan-1995 #sequence_revision 13-Jan-1995 #text_change 09-Jul-2004
 C;Accession: S31391
 R;Tavernor, A.S.; Butcher, G.W.
 submitted to the EMBL Data Library, November 1992
 A;Description: cDNA cloning of equine interleukin-2 by polymerase chain reaction.
 A;Reference number: S31391
 A;Accession: S31391
 A;Status: preliminary
 A;Molecule type: mRNA
 A;Residues: 1-149 <TAV>
 A;Cross-references: UNIPROT:P37997; EMBL:X69393; NID:g1076; PIDN:CAA49190.1; PID:g1077
 C;Superfamily: interleukin-2

Query Match 60.5%; Score 92; DB 2; Length 149;
 Best Local Similarity 56.7%; Pred. No. 4e-06;
 Matches 17; Conservative 8; Mismatches 5; Indels 0; Gaps 0;

QY 2 APTSSSTKKTQQLQLEHLLDLQMLINGINN 31
 ||||| | : ||||| : |||||
 Db 21 APTSSKRETOQLKQLQMLDLKLLGGVNN 50
 ||||| | : ||||| : |||||

RESULT 8
 I45913
 interleukin-2 precursor - bovine
 C;Species: Bos primigenius taurus (cattle)
 C;Date: 16-Aug-1996 #sequence_revision 16-Aug-1996 #text_change 09-Jul-2004
 C;Accession: I45913; S21470; S20761
 R;Cerratti, D.P.; McKereghan, K.; Iarsen, A.; Cantrell, M.A.; Anderson, D.; Gillis, S.;
 Proc. Natl. Acad. Sci. U.S.A. 83, 3223-3227, 1986
 A;Title: Cloning, sequence, and expression of bovine interleukin 2.
 A;Reference number: I45913; MUID:86205869; PMID:3517854
 A;Accession: I45913
 A;Status: preliminary; translated from GB/EMBL/DBJ
 A;Molecule type: mRNA
 A;Residues: 1-155 <CER>
 A;Cross-references: UNIPROT:P05016; GB:M12791; NID:g163204; PIDN:AAA30586.1; PID:g163205
 R;Anikeeva, N.N.; Vinogradova, T.V.; Votoshin, O.N.
 submitted to the EMBL Data Library, December 1989
 A;Reference number: S21470
 A;Accession: S21470
 A;Molecule type: DNA
 A;Residues: 1-22 <ANA>
 A;Cross-references: EMBL:X17201; NID:g452; PIDN:CAA35062.1; PID:g453
 C;Genetics:
 A;Gene: IL-2
 C;Superfamily: interleukin-2
 C;Keywords: cytokine; glycoprotein; growth factor; immunoregulation; lymphokine; T-cell

Query Match 52.0%; Score 79; DB 2; Length 155;
 Best Local Similarity 53.3%; Pred. No. 0.00034;
 Matches 16; Conservative 6; Mismatches 8; Indels 0; Gaps 0;

QY 2 APTSSSTKKTQQLQLEHLLDLQMLINGINN 31
 ||||| | : ||||| : |||||
 Db 21 APTSSSTGNTMKVKSLLLDLQLLLEKVK 50
 ||||| | : ||||| : |||||

RESULT 9
 S38662
 interleukin-2 - goat
 C;Species: Capra aegagrus hircus (domestic goat)
 C;Date: 06-Jan-1995 #sequence_revision 06-Jan-1995 #text_change 09-Jul-2004
 C;Accession: S38662
 R;Rimstad, E.
 submitted to the EMBL Data Library, November 1993
 A;Description: The molecular cloning and expression of caprine interleukin 2.
 A;Reference number: S38662
 A;Accession: S38662
 A;Status: preliminary
 A;Molecule type: mRNA
 A;Residues: 1-155 <RIM>
 A;Cross-references: UNIPROT:P36835; EMBL:X76063; NID:g416002; PIDN:CAA53664.1; PID:g4160
 C;Superfamily: interleukin-2

Query Match 52.0%; Score 79; DB 2; Length 155;
 Best Local Similarity 53.3%; Pred. No. 0.00034;
 Matches 16; Conservative 6; Mismatches 8; Indels 0; Gaps 0;

QY 2 APTSSSTKKTQQLQLEHLLDLQMLINGINN 31
 ||||| | : ||||| : |||||
 Db 21 APTSSSTGNTMKVKSLLLDLQLLLEKVK 50
 ||||| | : ||||| : |||||

RESULT 10
 S11488
 interleukin-2 precursor - sheep
 C;Species: Ovis orientalis aries, Ovis ammon aries (domestic sheep)
 C;Date: 21-Nov-1993 #sequence_revision 10-Nov-1995 #text_change 09-Jul-2004
 C;Accession: S11488; S13102; S15517
 R;Goodall, J.C.; Emery, D.C.; Perry, A.C.F.; English, L.S.; Hall, L.
 Nucleic Acids Res. 18, 5883, 1990
 A;Title: cDNA cloning of ovine interleukin 2 by PCR.
 A;Reference number: S11488; MUID:91016933; PMID:2216781
 A;Accession: S11488
 A;Status: preliminary
 A;Molecule type: mRNA
 A;Residues: 1-155 <GOO>
 A;Cross-references: UNIPROT:P19114; EMBL:X53934; NID:g1281; PIDN:CAA37881.1; PID:g1282
 R;Seow, H.F.; Rothel, J.S.; Radford, A.J.; Wood, P.R.
 Nucleic Acids Res. 18, 7175, 1990
 A;Title: The molecular cloning of ovine interleukin 2 gene by the polymerase chain react
 A;Reference number: S13102; MUID:91088336; PMID:2263496
 A;Accession: S13102
 A;Status: preliminary
 A;Molecule type: mRNA
 A;Residues: 1-5,'L',7-155 <SEO>
 A;Cross-references: EMBL:X55641; NID:g1810; PIDN:CAA39165.1; PID:g1811
 R;Bujdosó, R.; Williamson, M.L.; Sargan, D.R.; Hein, W.H.; McConnell, I.
 submitted to the EMBL Data Library, April 1991
 A;Reference number: S15517
 A;Accession: S15517
 A;Status: preliminary
 A;Molecule type: mRNA
 A;Residues: 21-153 <BUJ>
 A;Cross-references: EMBL:X60148
 C;Superfamily: interleukin-2

Query Match 52.0%; Score 79; DB 2; Length 155;
 Best Local Similarity 53.3%; Pred. No. 0.00034;
 Matches 16; Conservative 6; Mismatches 8; Indels 0; Gaps 0;

QY 2 APTSSSTKKTQQLQLEHLLDLQMLINGINN 31
 ||||| | : ||||| : |||||
 Db 21 APTSSSTGNTMKVKSLLLDLQLLLEKVK 50
 ||||| | : ||||| : |||||

A;Cross-references: GB:M16760	
R;Yokota, T.; Arai, N.; Lee, F.; Rennick, D.; Mosmann, T.; Arai, K.	
Proc. Natl. Acad. Sci. U.S.A. 82, 68-72, 1985	
A;Title: Use of a cDNA expression vector for isolation of mouse interleukin 2 cDNA clone	
A;Status: preliminary; translated from GB/EMBL/DBJ	
A;Accession: I54512	
A;Reference number: I54512; MUID:93307791; PMID:8319981	
A;Title: Existence of at least five interleukin-2 molecules in different mouse strains.	
Immunogenetics 36, 380-385, 1992	

```

A:Molecule type: DNA
A:Residues: 1-62 <RES>
A:Cross-references: GB:L07574; NID:g349513; PIDN:AAA39326.1; PID:g349514
C:Genetics:
A:Gene: IL-2
C:Superfamily: interleukin-2

Query Match      38.5%; Score 58.5; DB 2; Length 62;
Best Local Similarity 42.9%; Pred. No. 0.13;
Matches 15; Conservative 6; Mismatches 5; Indels 9; Gaps 1;

Qy  2 APTSSST-----KTTQLQLEHLLLDLQMLN 27
      :|||||      :: ||| ||| :||| :|:
Db  25 SPTSSSTSSSTAERAAQQQQQQHLEQLQLMDLQELLS 59

RESULT 15
I68871
interleukin 2 - mouse (fragment)
C:Species: Mus musculus (house mouse)
C:Date: 02-Aug-1996 #sequence_revision 02-Aug-1996 #text_change 16-Jul-1999
C:Accession: I68871
R:Matesanz, F.; Alcina, A.; Pellicer, A.
Immunogenetics 38, 300-303, 1993
A:Title: Existence of at least five interleukin-2 molecules in different mouse strains.
A:Reference number: I54512; MUID:93307791; PMID:8319981
A:Accession: I68871
A>Status: preliminary; translated from GB/EMBL/DBJ
A:Molecule type: DNA
A:Residues: 1-72 <RES>
A:Cross-references: GB:L07576; NID:g349517; PIDN:AAA39328.1; PID:g349518
C:Genetics:
A:Gene: IL-2
C:Superfamily: interleukin-2

```

```

Query Match      37.8%; Score 57.5; DB 2; Length 72;
Best Local Similarity 35.6%; Pred. No. 0.21;
Matches 16; Conservative 5; Mismatches 5; Indels 19; Gaps 1;

Qy    2 APTSSSTKKTQLQ-----LEHLHLDLQMILN 27
       :|||||:|:|||||:|:|||||:|:
Db    25 SPTSSSTAQAQQQQQQQQQQQQQQQHLEQLLMDLQELLS 69
       :|||||:|:|||||:|:|||||:|:

RESULT 16
S12169
isopenicillin N acyltransferase (EC 2.3.1.-) - Emericella nidulans
N:Alternate names: acyl coenzyme A-6-aminopenicillanic acid acyltransferase; acyltransferase
C:Species: Emericella nidulans, Aspergillus nidulans
C>Date: 21-Nov-1993 #sequence_revision 10-Nov-1995 #text_change 09-Jul-2004
C:Accession: S12169; A36142; S09090
R:Montenegro, E.; Barredo, J.L.; Gutierrez, S.; Diez, B.; Alvarez, E.; Martin, J.F.
Mol. Gen. Genet. 221, 322-330, 1990
A:Title: Cloning, characterization of the acyl-CoA:6-amino penicillanic acid acyltransferase
A:Reference number: S12169; MUID:90340281, PMID:2166227
A:Accession: S12169
A>Status: preliminary
A:Molecule type: DNA
A:Residues: 1-357 <MON>
A:Cross-references: UNIPROT:P21133; EMBL:X53310; NID:g23378; PIDN:CAA37394.1; PID:g2379
R:Tobin, M.B.; Fleming, M.D.; Skatrud, P.L.; Miller, J.R.
J. Bacteriol. 172, 5908-5914, 1990
A:Title: Molecular characterization of the acyl-coenzyme A:isopenicillin N acyltransferase
herarchia coli.
A:Reference number: A36142; MUID:91008967; PMID:2120195
A:Accession: A36142
A>Status: preliminary
A:Molecule type: DNA
A:Residues: 1-357 <TOB>
A:Cross-references: GB:M58293; NID:g167999; PIDN:AAA33287.1; PID:g168000
R:Whiteman, P.A.; Abraham, E.P.; Baldwin, M.D.; Schofield, C.J.; Sutherland
FEBS Lett. 262, 342-344, 1990
A:Title: Acyl coenzyme A: 6-aminopenicillanic acid acyltransferase from Penicillium chrysogenum
```

A;Reference number: S09089; MUID:90242961; PMID:2110531
A;Accession: S09090
A:Molecule type: Protein
C;Residues: 103-122 <WHI>
C;Genetics:
A;Introns: 12/3; 71/1; 121/3
C;Keywords: acyltransferase

Query Match 35.5%; Score 54; DB 2; Length 357;
Best Local Similarity 52.6%; Pred. No. 4.1;
Matches 10; Conservative 5; Mismatches 4; Indels 0; Gaps 0;

Oy 8 TKKTQLQLEHLLDLOMIL 26
||| : || | : ::
Db 40 TTKTQTAELEQLRELEQM 58
|||| : || | : :

RESULT 17
F64145
hypothetical protein HI0227 - Haemophilus influenzae (strain Rd KW20)
C;Species: Haemophilus influenzae
C;Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 09-Jul-2004
C;Accession: F64145
R;Feleischmann, R.D.; Adams, M.D.; White, O.; Clayton, R.A.; Kirkness, E.F.; Kerlavage, J.
Gocayne, J.D.; Scott, J.; Shirley, R.; Liu, L.I.; Glodek, A.; Kelley, J.M.; Weidman,
D.M.; Brandon, R.C.; Fine, L.D.; Fritchman, J.L.; Fuhrmann, J.L.; Geoghegan, N.S.M.
Science 269, 496-512, 1995
A;Authors: Ghelm, C.L.; McDonald, L.A.; Small, K.V.; Fraser, C.M.; Smith, H.O.; Venter,
A.;Title: Whole-genome random sequencing and assembly of Haemophilus influenzae Rd.
A;Reference number: A64000; MUID:95350630; PMID:7542800
A;Accession: F64145
A>Status: nucleic acid sequence not shown; translation not shown
A:Molecule type: DNA
A;Residues: 1-155 <TIGR>
A;Cross-references: UNIPROT:P44583; GB:U32709; GB:L42023; NID:g1573190; PIDN:AAC21897.1;
A;Note: best homolog was a hypothetical protein from Escherichia coli
C;Superfamily: hypothetical protein HI0227

Query Match 34.2%; Score 52; DB 1; Length 155;
Best Local Similarity 29.0%; Pred. No. 3.2;
Matches 9; Conservative 8; Mismatches 14; Indels 0; Gaps 0;

Oy 1 MAPTSSTPKTQLQHLLLDLQMLINGNN 31
|| : || | : || : ||
Db 50 MEPTAPEPSKKALHHYELDVQVLIRGTEN 80
|| : || | : || : ||

RESULT 18
G82262
probable exopolysaccharide biosynthesis protein VC0937 [imported] - Vibrio cholerae (str
C;Species: Vibrio cholerae
C;Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change 09-Jul-2004
C;Accession: G82262
R;Heidelberg, J.F.; Eisen, J.A.; Nelson, W.C.; Clayton, R.A.; Winn, M.L.; Dodson, R.J.;
chardson, D.; Ermolaeva, M.D.; Vamathevan, J.; Bass, S.; Qin, H.; Dragoi, I.; Sellers, P.
J., R.R.; Mekalanos, J.J.; Venter, J.C.; Fraser, C.M.
Nature 406, 477-483, 2000
A;Title: DNA Sequence of both chromosomes of the cholera pathogen Vibrio cholerae.
A;Reference number: A82035; MUID:20406833; PMID:10952301
A;Accession: G82262
A>Status: preliminary
A:Molecule type: DNA
A;Residues: 1-737 <HEI>
A;Cross-references: UNIPROT:O9KGT5; GB:AE004176; GB:AE003852; NID:g9655385; PIDN:AAF9409
A;Experimental source: serogroup O1; strain IN6961; biotype El Tor
C;Genetics:
A;Gene: VC0937
A;Map position: 1

Query Match	34.2%	Score 52;	DB 2;	Length 737;
Best Local Similarity	39.4%	Prod. No. 18;		
Matches 13;	Conservative 4;	Mismatches 12;	Indels 4;	Gaps 1;

QY 3 PTSSSTKKTQLE-----HLLDLQMLNGINN 31
| | | | | : | : | | | | |
Db 330 PKHPKLKSAQAQLEAVRKNLRALRQLNGINN 362
| | | | | : | : | | | | |
RESULT 19
F95285
probable LysR-type regulator [imported] - Sinorhizobium meliloti (strain 1021) magaplasmi
C:Species: Sinorhizobium meliloti
C>Date: 24-Aug-2001 #sequence_revision 24-Aug-2001 #text_change 09-Jul-2004
C:Accession: F95285
R:Barnett, M.J.; Fisher, R.F.; Jones, T.; Komp, C.; Abola, A.P.; Barloy-Hubler, F.; Bows
; Kalman, S.; Keating, D.H.; Palm, C.; Peck, M.C.; Surzycki, R.; Wells, D.H.; Yeh, K.C.
Proc. Natl. Acad. Sci. U.S.A. 98, 9893-9898, 2001
A:Title: Nucleotide sequence and predicted functions of the entire Sinorhizobium meliloti
A:Reference number: A95262; MUID:21396509; PMID:11481432
A:Accession: F95285
A>Status: preliminary
A:Molecule type: DNA
A:Residues: 1-304 <KUR>
A:Cross-references: UNIPROT:Q930K5; GB:AE006469; PIDN:AAK64848.1; PID:G14523262; GSPDB:C
A:Experimental source: strain 1021, megaplasmid pSymA
R:Galibert, F.; Finan, T.M.; Long, S.R.; Puhler, A.; Abola, P.; Ampe, F.; Barloy-Hubler,
Pela, D.; Chain, P.; Cowie, A.; Davis, R.W.; Dreano, S.; Federspiel, N.A.; Fisher, R.F.;
L.; Hyman, R.W.; Jones, T.
Science 293, 668-672, 2001
A:Authors: Kahn, D.; Kahn, M.L.; Kalman, S.; Keating, D.H.; Kiss, E.; Komp, C.; Lelaure,
hebaull, P.; Vandenbol, M.; Vorholter, F.J.; Weidner, S.; Wells, D.H.; Wong, K.; Yeh, K.
A:Title: The composite genome of the legume symbiont Sinorhizobium meliloti.
A:Reference number: A96039; MUID:21368234; PMID:11474104
A:Contents: annotation
C:Genetics:
A:Gene: Sma0353
A:Genome: plasmid

Query Match 33.6%; Score 51; DB 2; Length 304;
Best Local Similarity 48.1%; Pred. No. 9.5;
Matches 13; Conservative 5; Mismatches 7; Indels 2; Gaps 1;
QY 7 STKKTQLE-HLLDLQMLNGINN 31
| | | | | : | : | | | | |
Db 58 STKKTQLEGRVLAARSVNGIDN 84
| | | | | : | : | | | | |
RESULT 20
E70122
flagellar hook-associated protein (FlgK) homolog - Lyme disease spirochete
C:Species: Borrelia burgdorferi (lyme disease spirochete)
C>Date: 13-Feb-1998 #sequence_revision 13-Feb-1998 #text_change 09-Jul-2004
C:Accession: E70122
R:Fraser, C.M.; Casjens, S.; Huang, W.M.; Sutton, G.G.; Clayton, R.; Lathigra, R.; White
son, D.; Peterson, J.; Krelavage, A.R.; Quackenbush, J.; Salzberg, S.; Hanson, M.; Vugt,
; Bowman, C.; Garland, S.; Fujii, C.; Cotton, M.D.; Horat, K.; Roberts, K.; Hatch, B.
Nature 390, 580-586, 1997
A:Authors: Smith, H.O.; Venter, J.C.
A:Title: Genomic sequence of a Lyme disease spirochaete, Borrelia burgdorferi.
A:Reference number: A70100; MUID:98065943; PMID:9403685
A:Accession: E70122
A>Status: preliminary; nucleic acid sequence not shown; translation not shown
A:Molecule type: DNA
A:Residues: 1-627 <KLE>
A:Cross-references: UNIPROT:P70859; GB:AE001129; PIDN:AAC6657
A:Experimental source: strain B31

Query Match 33.6%; Score 51; DB 2; Length 627;
Best Local Similarity 42.3%; Pred. No. 21;
Matches 11; Conservative 7; Mismatches 8; Indels 0; Gaps 0;
QY 5 SSSTKKTQLEHLLDLQMLNGIN 30
| | | | | : | : | | | | |
Db 564 SBTKESQSKILKDLTLDRMSISGVN 589
| | | | | : | : | | | | |

RESULT 21
C70701
hypothetical protein RV0029 - Mycobacterium tuberculosis (strain H37Rv)
C:Species: Mycobacterium tuberculosis
C>Date: 17-Jul-1998 #sequence_revision 17-Jul-1998 #text_change 09-Jul-2004
C:Accession: C70701
R:Coile, S.T.; Brosch, R.; Parkhill, J.; Garnier, T.; Churcher, C.; Harris, D.; Gordon, S.
; Connor, R.; Davies, R.; Devlin, K.; Feltwell, T.; Gentles, S.; Hamlin, N.; Holroyd, S.
Rajandream, M.A.; Rogers, J.; Rutter, S.; Seeger, K.; Skelton, S.; Squares, S.
Nature 393, 537-544, 1998
A:Authors: Sgares, R.; Sulston, J.E.; Taylor, K.; Whitehead, S.; Bartell, B.G.
A:Title: Deciphering the biology of Mycobacterium tuberculosis from the complete genome
A:Reference number: A70500; MUID:98295987; PMID:9634230
A:Accession: C70701
A>Status: preliminary; nucleic acid sequence not shown; translation not shown
A:Molecule type: DNA
A:Residues: 1-365 <COL>
A:Cross-references: UNIPROT:P71599; GB:Z80233; GB:AL123456; NID:G3261645; PIDN:CAB02414
A:Experimental source: strain H37Rv
C:Genetics:
A:Gene: RV0029

Query Match 32.9%; Score 50; DB 2; Length 365;
Best Local Similarity 40.0%; Pred. No. 16;
Matches 12; Conservative 4; Mismatches 14; Indels 0; Gaps 0;
QY 2 APTSSSTKKTQLEHLLDLQMLNGINN 31
| | | | | : | : | | | | |
Db 43 AELSSNTATATLAELKADLHRIVGSAND 72
| | | | | : | : | | | | |
RESULT 22
H82447
DNA-binding response regulator VCA0532 [imported] - Vibrio cholerae (strain N16961 sero
C:Species: Vibrio cholerae
C>Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change 09-Jul-2004
C:Accession: H82447
R:Heidelberg, J.F.; Eisen, J.A.; Nelson, W.C.; Clayton, R.A.; Gwinn, M.L.; Dodson, R.J.;
Chardon, D.; Ermolaeva, M.D.; Vamathevan, J.; Bass, S.; Qin, H.; Dragoi, I.; Sellers, F.
; R.R.; Mekalanos, J.J.; Venter, J.C.; Fraser, C.M.
Nature 406, 477-483, 2000
A:Title: DNA Sequence of both chromosomes of the cholera pathogen Vibrio cholerae.
A:Reference number: A82035; MUID:20406833; PMID:10952301
A:Accession: H82447
A>Status: Preliminary
A:Molecule type: DNA
A:Residues: 1-230 <HEI>
A:Cross-references: UNIPROT:Q9KM56; GB:AE004384; GB:AE003853; NID:G9657936; PIDN:AAF9643
A:Experimental source: serogroup O1, strain N16961, biotype El Tor
C:Genetics:
A:Gene: VCA0532
A:Map position: 2
C:Superfamily: ompR protein; response regulator homology

Query Match 32.2%; Score 49; DB 2; Length 230;
Best Local Similarity 40.9%; Pred. No. 14;
Matches 9; Conservative 8; Mismatches 5; Indels 0; Gaps 0;
QY 1 MAPSSSTKKTQLEHLLDL 22
| | | | | : | : | | | | |
Db 121 LAPSTESVEQTRFELGDLVLDL 142
| | | | | : | : | | | | |

RESULT 23
F82217
methyl-accepting chemotaxis protein VC1298 [imported] - Vibrio cholerae (strain N16961 s
C:Species: Vibrio cholerae
C>Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change 09-Jul-2004
C:Accession: F82217
R:Heidelberg, J.F.; Eisen, J.A.; Nelson, W.C.; Clayton, R.A.; Gwinn, M.L.; Dodson, R.J.;
Chardon, D.; Ermolaeva, M.D.; Vamathevan, J.; Bass, S.; Qin, H.; Dragoi, I.; Sellers, R.J.;
l, R.R.; Mekalanos, J.J.; Venter, J.C.; Fraser, C.M.
Nature 406, 477-483, 2000


```
RESULT 28
AC1736
A:aminopeptidase C [imported] - Listeria innocua (strain Clip11262)
C:Species: Listeria innocua
C>Date: 27-Nov-2001 #sequence_revision 27-Nov-2001 #text_change 09-Jul-2004
C:Accession: AC1736
R:Glaser, P.; Frangeul, L.; Buchrieser, C.; Amend, A.; Baquero, F.; Berche, P.; Bloeker,
D.; Jones, L.M.; Karst, U.
Science 294, 849-852, 2001
A:Authors: Krefit, J.; Kuhn, M.; Kunst, F.; Kurapkat, G.; Madueno, E.; Maitournam, A.; Ma
ok, C.; Schluter, T.; Simoes, N.; Rierrez, A.; Vazquez-Boland, J.A.; Voss, H.; Wehland,
A.; Title: Comparative Genomics of Listeria species.
A:Reference number: AB1077; MUID:21537279; PMID:11679669
A:Accession: AC1736
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 1-441 <GLA>
A:Cross-references: UNIPROT:Q928V0; GB:AL592022; PIDN:CAC97659.1; PID:g16414954; GSPDB:C
A:Experimental source: strain Clip11262
C:Genetics:
A:Gene: pepC
C:Superfamily: aminopeptidase C (bleomycin hydrolase)

Query Match 31.6%; Score 48; DB 2; Length 441;
Best Local Similarity 34.6%; Pred. No. 40;
Matches 9; Conservative 7; Mismatches 10; Indels 0; Gaps 0;

QY 5 SSSTKKTQLQLEHLLDLQMLN 30
Db 344 TMTKAEKLDYKSHMLTHAMVLTGVN 369

RESULT 29
JC8012
G protein-coupled neurotrophin-2 receptor (CG8795) - fruit fly (Drosophila mel
C:Species: Drosophila melanogaster
C>Date: 04-Apr-2004 #sequence_revision 04-Apr-2004 #text_change 04-Apr-2004
C:Accession: JC8012
R:Rosenkilde, C.; Gazzamali, G.; Williamson, M.; Hauser, F.; Sondergaard, L.; DeLotto, R
Biochem. Biophys. Res. Commun. 309, 485-494, 2003
A:Title: Molecular cloning, functional expression, and gene silencing of two Drosophila
A:Reference number: JC8011; PMID: 12951076
A:Accession: JC8012
A:Molecule type: mRNA
A:Residues: 1-595 <ROS>
A:Cross-references: GB:AY277899
C:Comment: This receptor is a G protein-coupled receptor and a transmembrane protein as
e, feeding, and behavior.
C:Genetics:
A:Gene: CG8795
A:Introns: 115/1; 170/2; 214/3; 281/1; 352/3; 390/3
C:Keywords: G protein-coupled receptor; neurotrophin-2; transmembrane protein

Query Match 31.6%; Score 48; DB 2; Length 595;
Best Local Similarity 48.4%; Pred. No. 56;
Matches 15; Conservative 3; Mismatches 9; Indels 4; Gaps 2;

QY 1 MAPTSSS-TKTKQLQLEH---LLDLQMLN 27
Db 1 MLPTNSSGVLATDLQLFHNEKFLNLTQVLN 31

RESULT 30
GNLJG4
HIV-1 retrovirus (EC 3.4.23.16) - simian immunodeficiency virus (African green monkey
N:Contains: endonuclease (EC 3.1.-.-); retrovirus (EC 3.4.23.16); RNA-directed DNA poly
C:Species: simian immunodeficiency virus, SIV
C>Date: 30-Jun-1989 #sequence_revision 30-Jun-1989 #text_change 03-Jun-2002
C:Accession: B30045
R:Fukushima, M.; Miura, T.; Hasegawa, A.; Morikawa, S.; Tsujimoto, H.; Miki, K.; Kitamura
Nature 333, 457-461, 1988
A:Title: Sequence of simian immunodeficiency virus from African green monkey, a new memb
```

```
A:Reference number: A30045; MUID:88232906; PMID:3374586
A:Accession: B30045
A:Molecule type: DNA
A:Residues: 1-1061 <FUK>
A:Cross-references: EMBL:X07805; NID:961748; PID:g1335593
C:Comment: Specific enzymatic cleavages may yield mature proteins including protease, r
C:Genetics:
A:Gene: pol
C:Superfamily: pol polyprotein
C:Keywords: aspartic proteinase; hydrolase; nucleotidyltransferase; polyprotein; revers
F111-210/Product: retrovirus #status predicted <RTP>
F134/Active site: Asp (shared with dimeric partner) #status predicted

Query Match 31.6%; Score 48; DB 1; Length 1061;
Best Local Similarity 52.9%; Pred. No. 1.1e+02;
Matches 9; Conservative 4; Mismatches 4; Indels 0; Gaps 0;

QY 11 TQLQLEHLLDLQMLN 27
Db 976 TQLQLEHLLDLQMLN 992

RESULT 31
T11685
hypothetical protein SPBC21D10.13 SPBC1921.07c - fission yeast (Schizosaccharomyces pom
C:Species: Schizosaccharomyces pombe
C>Date: 16-Jul-1999 #sequence_revision 15-Sep-2000 #text_change 09-Jul-2004
C:Accession: T11685; T39791
R:Seeger, K.; Harris, D.; Wood, V.; Rajandream, M.A.; Barrell, B.G.
submitted to the EMBL Data Library, September 1998
A:Reference number: Z17313
A:Accession: T11685
A:Status: preliminary; translated from GB/EMBL/DBJ
A:Molecule type: DNA
A:Residues: 1-155 <SE>
A:Cross-references: UNIPROT:Q9USW9; EMBL:AL031536; NID:e1319499
A:Experimental source: strain 972h(-)
R:Seeger, K.; Harris, D.; McDougall, R.C.; Rajandream, M.A.; Barrell, B.G.
submitted to the EMBL Data Library, October 1999
A:Reference number: Z21816
A:Accession: T39791
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 129-244 <SE2>
A:Cross-references: EMBL:AL122033; PIDN:CAB58973.1; GSPDB:GN00067; SPDB:SPBC1921.07c
C:Genetics:
A:Map position: IIR
A:Note: SPBC21D10.13
A:Note: intron positions not resolved (incomplete sequence)

Query Match 31.2%; Score 47.5; DB 2; Length 244;
Best Local Similarity 45.8%; Pred. No. 24;
Matches 11; Conservative 4; Mismatches 6; Indels 3; Gaps 1;

QY 4 TSSSTKKTQLQLEHLLDLQMLN 27
Db 59 TSEBQKK---ELEHTMQSLEMLN 79

RESULT 32
P86548
polymorphic outer membrane protein B family [imported] - Chlamydomonas pneumoniae (strain
C:Species: Chlamydomonas pneumoniae, Chlamydia pneumoniae
C>Date: 02-Mar-2001 #sequence_revision 02-Mar-2001 #text_change 09-Jul-2004
C:Accession: P86548
R:Shirai, M.; Hirakawa, H.; Kimoto, M.; Tabuchi, M.; Kishi, F.; Ouchi, K.; Shiba, T.; Is
Nucleic Acids Res. 28, 2311-2314, 2000
A:Title: Comparison of whole genome sequences of chlamydia pneumoniae J138.
A:Reference number: A86491; MUID:20330349; PMID:10871362
A:Accession: P86548
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 1-938 <STO>
```


A;Cross-references: UNIPROT:Q9Z883; GB:BA000008; MID:g8978836; PIDN:BAA98772.1; GSPDB:GN
A;Experimental source: strain J138
C;Genetics:
A;Gene: pmp_15

Query Match 31.2%; Score 47.5; DB 2; Length 938;
Best Local Similarity 42.9%; Pred. No. 1.1e+02;
Matches 12; Conservative 4; Mismatches 9; Indels 3; Gaps 1;

QY 3 PTSSSTKKT---QLQLEHLLLDLQMLN 27
||| ||| : : : : :
DB 473 PTPSPTTVGVSTITLNLHIAIDLPSILS 500

RESULT 33
H72074
polymorphic membrane protein E/F family CP0286 [imported] - Chlamydia pneumoniae (st
C;Species: Chlamydia pneumoniae, Chlamydia pneumoniae
C;Date: 23-Apr-1999 #sequence_revision 23-Apr-1999 #text_change 09-Jul-2004
C;Accession: H72074; E81593

R;Kalan, S.; Mitchell, W.; Marathe, R.; Lammel, C.; Fan, J.; Olinger, L.; Grimwood, J.;
Nature Genet. 21, 385-389, 1999
A;Title: Comparative genomes of Chlamydia pneumoniae and C. trachomatis.
A;Reference number: A72000; MUID:99206606; PMID:10192388

A;Accession: H72074
A;Molecule type: DNA
A;Residues: 1-938 <ARN>
A;Cross-references: UNIPROT:Q9Z883; GB:AE001631; GB:AE001363; NID:G4376750; PIDN:AAI1860

A;Experimental source: strain CWJ029
R;Read, T.D.; Brunham, R.C.; Shen, C.; Gill, S.R.; Heidelberg, J.F.; White, O.; Hickey,
C.; Dodson, R.; Gwinn, M.; Nelson, W.; DeBoy, R.; Kolonay, J.; McClarty, G.; Salzberg,
Nucleic Acids Res. 28, 1397-1406, 2000
A;Title: Genome sequences of Chlamydia trachomatis MoPn and Chlamydia pneumoniae AR39.

A;Reference number: A81500; MUID:20150255; PMID:10684935
A;Accession: E81593
A;Molecule type: DNA

A;Residues: 1-938 <REA>
A;Cross-references: GB:AE002190; GB:AE002161; NID:g7189209; PIDN:AAF38143.1; PID:g718921

A;Experimental source: strain AR39, HL cells
C;Genetics:
A;Gene: pmp_15; CP0286

Query Match 31.2%; Score 47.5; DB 2; Length 938;
Best Local Similarity 42.9%; Pred. No. 1.1e+02;
Matches 12; Conservative 4; Mismatches 9; Indels 3; Gaps 1;

QY 3 PTSSSTKKT---QLQLEHLLLDLQMLN 27
||| ||| : : : : :
DB 473 PTPSPTTVGVSTITLNLHIAIDLPSILS 500

RESULT 34
B70209
conserved hypothetical protein BBA18 - Lyme disease spirochete plasmid A/lp54
C;Species: Borrelia burgdorferi (Lyme disease spirochete)
C;Date: 13-Feb-1998 #sequence_revision 13-Feb-1998 #text_change 09-Jul-2004
C;Accession: B70209

R;Fraser, C.M.; Casjens, S.; Huang, W.M.; Sutton, G.G.; Clayton, R.; Lathigra, R.; White
son, D.; Peterson, J.; Kerlavage, A.R.; Quackenbush, J.; Salzberg, S.; Hanson, M.; Vugt,
Bowman, C.; Garland, S.; Fujii, C.; Cotton, M.D.; Horst, K.; Roberts, K.; Hatch, B.
Nature 390, 580-586, 1997

A;Authors: Smith, H.O.; Venter, J.C.
A;Title: Genomic sequence of a Lyme disease spirochaete, Borrelia burgdorferi.
A;Reference number: A70100; MUID:198065943; PMID:9403685

A;Accession: B70209
A;Status: preliminary; nucleic acid sequence not shown; translation not shown
A;Molecule type: DNA

A;Residues: 1-398 <KLE>
A;Cross-references: UNIPROT:O50911; GB:AE000790; NID:g2690224; PIDN:AAC66245.1; PID:g269

A;Experimental source: strain B31
C;Genetics:
A;Genome: plasmid
C;Superfamily: Lyme disease spirochete plasmid conserved hypothetical protein BBG06

Query Match 30.9%; Score 47; DB 2; Length 398;
Best Local Similarity 40.7%; Pred. No. 50;
Matches 11; Conservative 4; Mismatches 12; Indels 0; Gaps 0;

QY 4 TSSSTKKTQLQLEHLLLDLQMLN 30
: : : : : : : : : : :
DB 11 TKRVKKTMMFQHNLIIVLITLAFIN 37

RESULT 35
F89839
hypothetical protein SA0640 [imported] - Staphylococcus aureus (strain N315)
C;Species: Staphylococcus aureus
C;Date: 10-May-2001 #sequence_revision 10-May-2001 #text_change 09-Jul-2004
C;Accession: F89839

R;Kuroda, M.; Ohta, T.; Uchiyama, I.; Baba, T.; Yuzawa, H.; Kobayashi, I.; Cui, L.; Oqu
ma, A.; Mizutani-Ui, Y.; Kobayashi, N.; Sawano, T.; Inoue, R.; Kaito, C.; Sekimizu, K.;
C.; Shiba, T.; Hattori, M.; Ogasawara, N.; Hayashi, H.; Hiranatsu, K.
Lancet 357, 1225-1240, 2001

A;Title: Whole genome sequencing of methicillin-resistant Staphylococcus aureus.
A;Reference number: A89758; MUID:21311952; PMID:11418146

A;Accession: F89839
A;Status: preliminary
A;Molecule type: DNA

A;Residues: 1-557 <KUR>
A;Cross-references: UNIPROT:Q99VT6; GB:BA000018; PID:g13700576; PIDN:BAB41873.1; GSPDB:B

A;Experimental source: strain N315
C;Genetics:
A;Gene: SA0640

Query Match 30.9%; Score 47; DB 2; Length 557;
Best Local Similarity 58.8%; Pred. No. 72;
Matches 10; Conservative 3; Mismatches 4; Indels 0; Gaps 0;

QY 12 QLQLEHLLLDLQMLN 28
||| ||| : : : : :
DB 440 QLDLEHLALERQIDLDG 456

RESULT 36
T41244
SPC14 protein homolog SPC23B6.04c - fission yeast (Schizosaccharomyces pombe)
C;Species: Schizosaccharomyces pombe
C;Date: 03-Dec-1999 #sequence_revision 03-Dec-1999 #text_change 09-Jul-2004
C;Accession: T41244
R;Lyne, M.; Brown, S.; Quail, M.; Harris, D.; Rajandream, M.A.; Barrell, B.G.
submitted to the EMBL Data Library, July 1999
A;Reference number: Z21980

A;Accession: T41244
A;Status: preliminary; translated from GB/EMBL/DBJ
A;Molecule type: DNA
A;Residues: 1-1008 <LYN>

A;Cross-references: UNIPROT:Q9U099; EMBL:AL109608; PIDN:CAB51563.1; GSPDB:GN00068; SPDB:

A;Experimental source: strain 972h-; cosmid c23B6
C;Genetics:
A;Gene: SPDB:SPCC23B6.04c

A;Map position: 3
F.639-822/Domain: cellular retinaldehyde-binding protein homology <CRB>

Query Match 30.9%; Score 47; DB 2; Length 1008;
Best Local Similarity 32.0%; Pred. No. 1.4e+02;
Matches 8; Conservative 7; Mismatches 10; Indels 0; Gaps 0;

QY 3 PTSSSTKKTQLQLEHLLLDLQMLN 27
: : : : : : : : : : :
DB 702 PARQNTKTSPIQRHLVFSLECAID 726

RESULT 37
A59282
nonmuscle myosin II heavy chain A - African clawed frog
C;Species: Xenopus laevis (African clawed frog)

C:Superfamily: Arabidopsis thaliana hypothetical protein F221l3.50

Query Match 30.6%; Score 46.5; DB 2; Length 211;
Best Local Similarity 46.4%; Pred. No. 29;
Matches 13; Conservative 3; Mismatches 9; Indels 3; Gaps 1;

Qy 3 PTSSSTKKTQLEHLLLDLQMLNGIN 30
Db 117 PTPTSKHK---LDWERYLHLQMLNKLN 141

RESULT 40
E90228
amino acid specific permease [imported] - Sulfolobus solfataricus
C:Species: Sulfolobus solfataricus
C:Date: 24-May-2001 #sequence_revision 24-May-2001 #text_change 09-Jul-2004
C:Accession: E90228
R;She, Q.; Singh, R.K.; Confalonieri, F.; Zivanovic, Y.; Allard, G.; Awayez, M.J.; Chan-
Jong, I.; Jeffries, A.C.; Kozera, C.J.; Medina, N.; Peng, X.; Thi-Ngoc, H.P.; Redder, I.;
arrett, R.A.; Ragan, M.A.; Senses, C.W.; Van der Oost, J.
submitted to GenBank, April 2001
A:Description: Sulfolobus solfataricus complete genome.
A:Reference number: A99139
A:Accession: E90228
A>Status: preliminary
A:Molecule type: DNA
A:Residues: 1-466 <KUR>
A:Cross-references: UNIPROT:Q9UXH3; GB:AE006641; NID:g13813962; PIDN:AAK41084.1; GSPDB:C
C:Genetics:
A:Gene: SSO0786

Query Match 30.6%; Score 46.5; DB 2; Length 466;
Best Local Similarity 38.1%; Pred. No. 70;
Matches 16; Conservative 5; Mismatches 10; Indels 11; Gaps 2;

Qy 1 MAPTSSSTTKKT---QLQLEHLLLDLQMLN-----GINN 31
Db 223 VAEEAKVPKTLPKALLEFLLLGVGLILNVAQAQTVVYGVNN 264

Search completed: September 23, 2005, 12:48:58
Job time : 27.3934 secs

This Page Blank (uspto)